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512

AMERICAN GAS JOURNAL

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Established 1859 Pioneer of the Gas Industry

Including · GAS INDUSTRY · Est. 1900 ·

Gas-Era Furnaces

Corrosion-proof cast iron; pressure tested ground joints; accessible for cleaning. Efficient, safe, completely equipped, quality-built, low priced. Tested and approved by the American Gas Association Laboratories.

L. J. MUELLER FURNACE CO.
Manufacturers & Western Distributors
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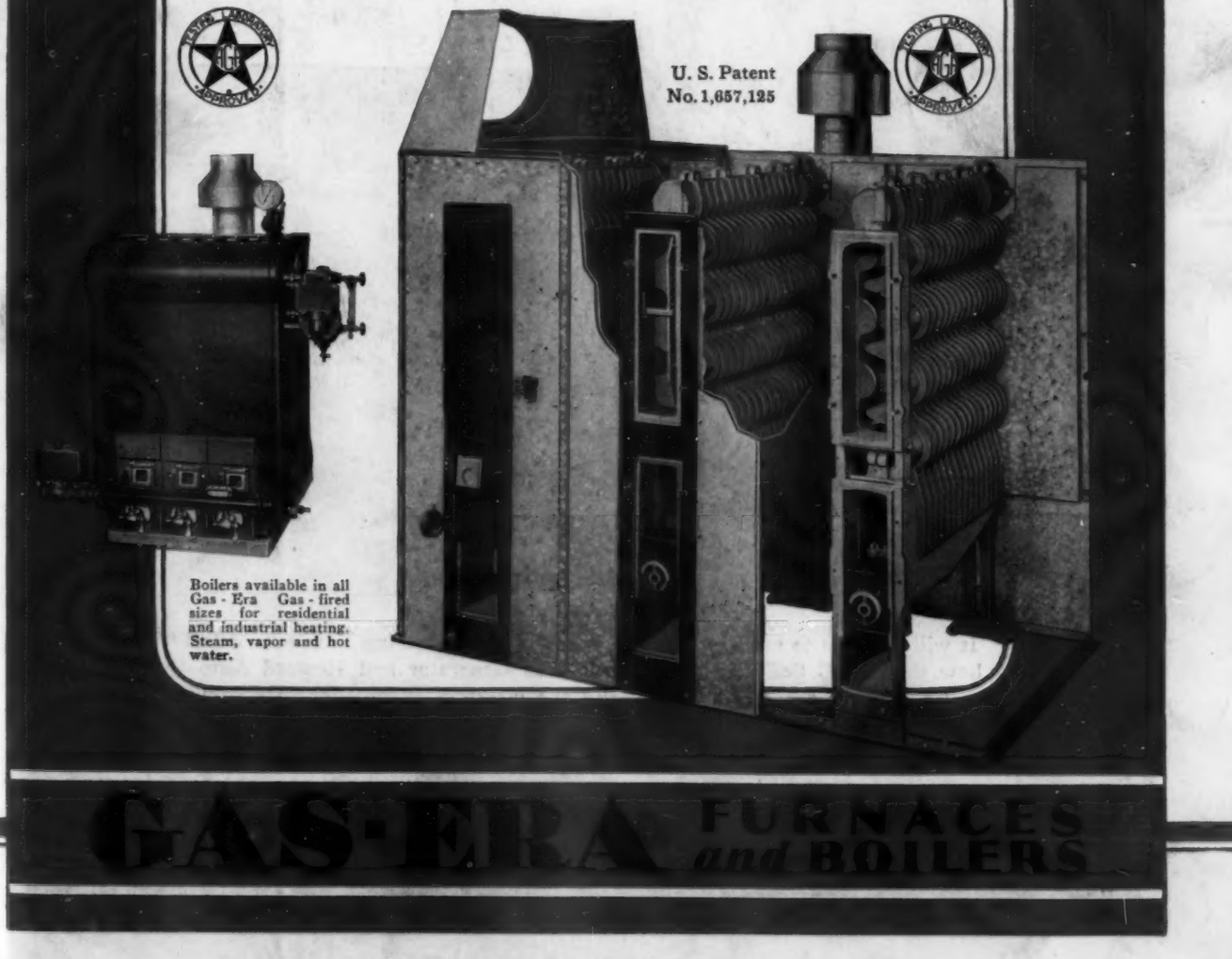
RICHARDSON & BOYNTON CO.
Eastern Distributors
200 Fifth Ave., New York City

U. S. Patent No. 1,657,125



Boilers available in all Gas-Era Gas-fired sizes for residential and industrial heating. Steam, vapor and hot water.

GAS-ERA FURNACES and BOILERS

Gas in the Home Number

THESE CAN BE YOURS!

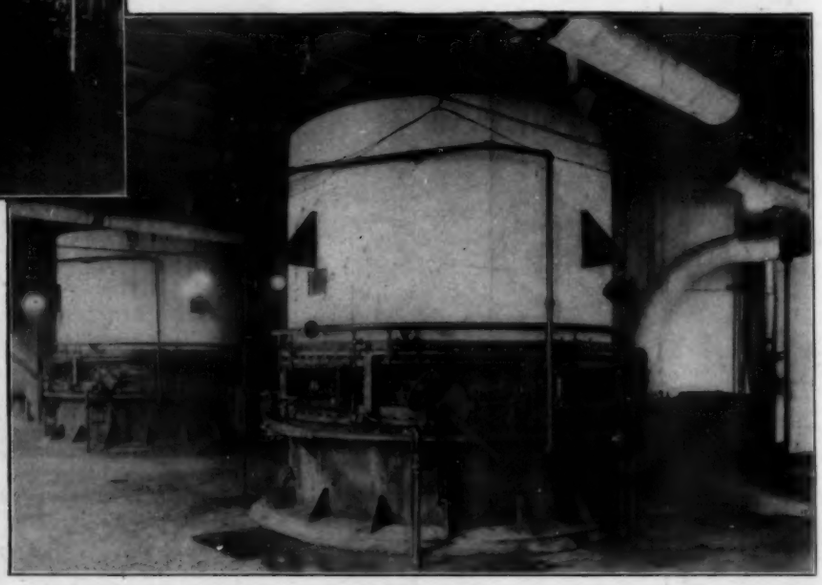
Labor Saving - Improved Operation
Increased Capacity - Less Fuel and Oil

These Two Machines will accomplish this

THE A-B-C SELF-CLINKERING WATER GAS GENERATOR

and HOWARD AUTOMATIC CHARGER

These two machines, developed from intensive research and experimentation by the Western Gas Construction Company into all phases of water gas generation, have demonstrated, after two years of practical operation, that fully automatic water gas generation as provided by these two pieces of apparatus is wholly successful.



To be progressive, — to operate economically and efficiently, to increase the profit on the send-out, — is to adopt these two rugged, time, fuel and oil saving machines.

It will pay you to send for our 24-page Booklet, describing in minute detail how the A-B-C Self-Clinkering Water Gas Generator and Howard Automatic Charger accomplished this and the manifold advantages that result from their use.

THE WESTERN GAS CONSTRUCTION COMPANY

FORT WAYNE, INDIANA.

AMERICAN
GAS JOURNAL
Established 1859 Pioneer of the Gas Industry
Including GAS INDUSTRY Est. 1900.
Published Monthly by American Gas Light Journal, Inc., 53 Park Place, New York, N. Y.
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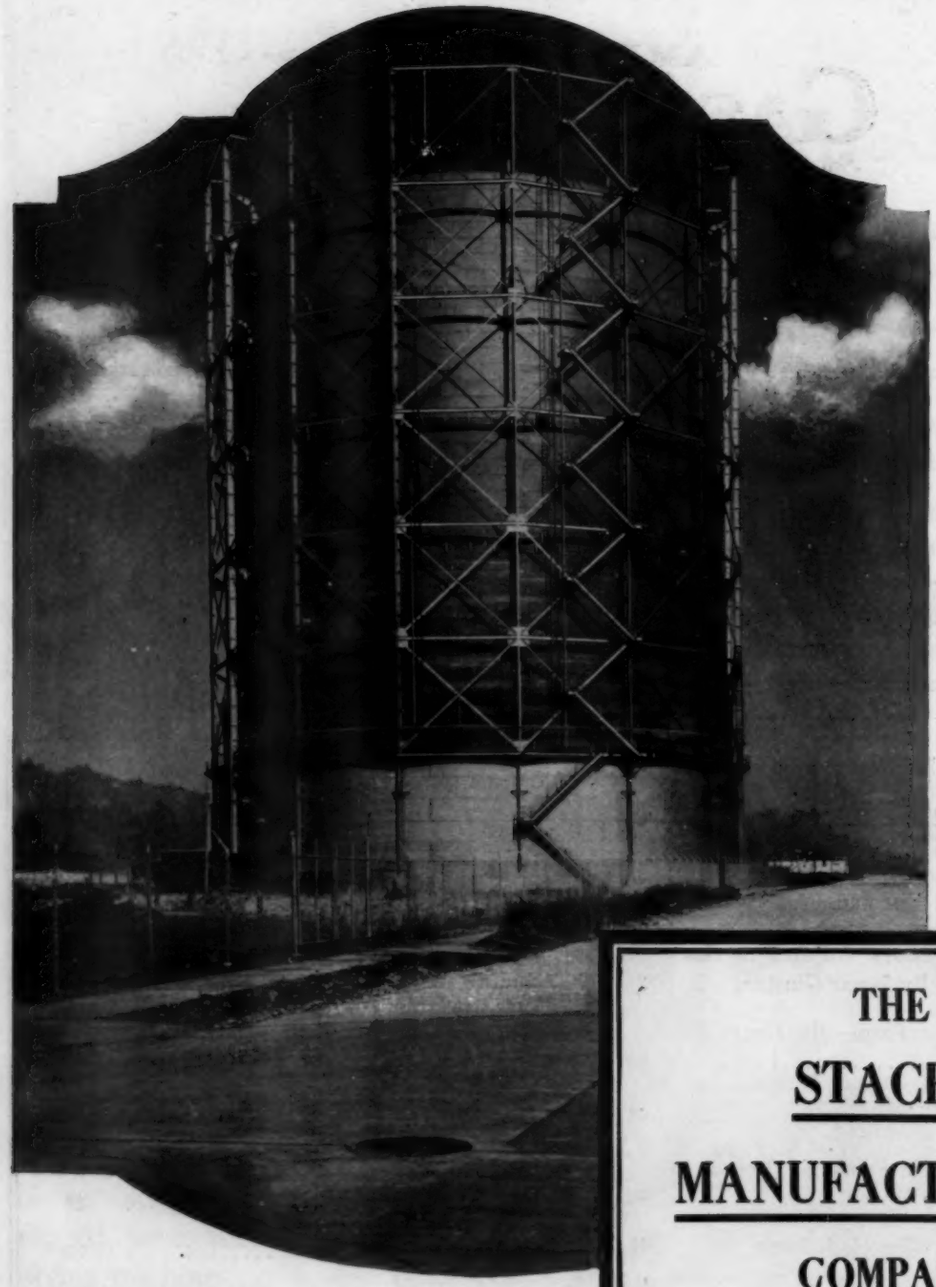


3,000,000 Cu. Ft. 5 Lift Gas Holder
Built for
The Nassau & Suffolk Lighting Co.,
Long Beach, Long Island

77 Years of Service to the Gas Industry

THE

STACEY

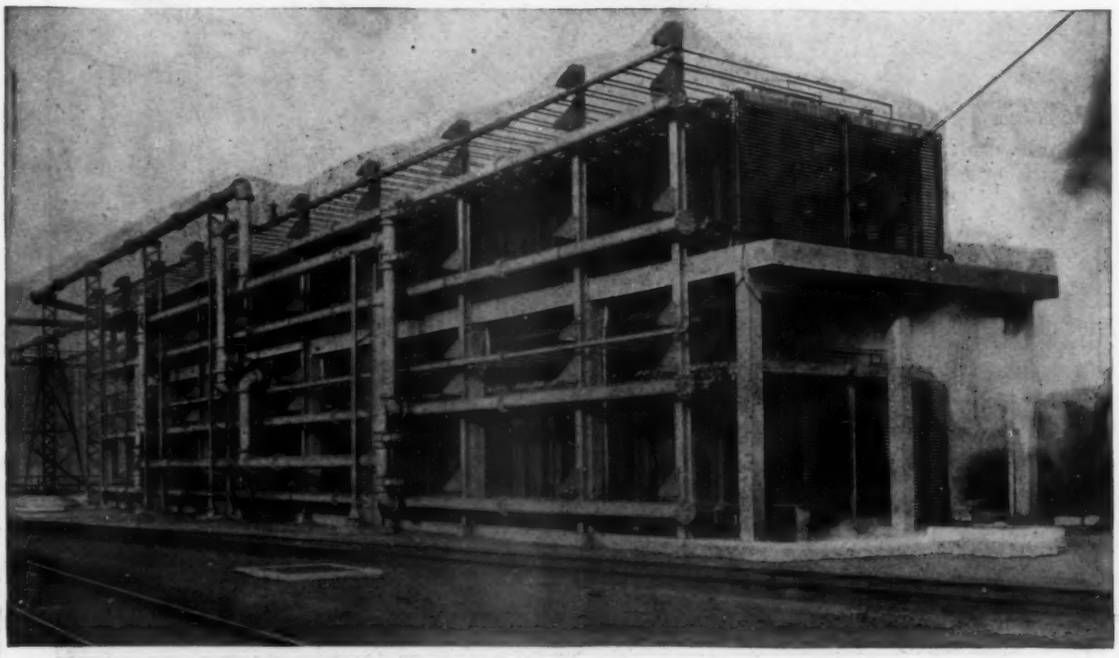
MANUFACTURING

COMPANY

CINCINNATI, OHIO

NEW YORK OFFICE
52 Vanderbilt Ave.

If Long Service Counts Install Steere Cooling Coils



A coke oven never shuts down. Equipment for handling the products it makes must be built for continuous service.

The 210 stacks of Steere Cooling Coils illustrated are located on one of the largest steel plants in America. They have been in continuous service for three years and are good for a great many more.

Dozens of other Steere Cooling Coil Installations—from a single bank upward—are giving equally perfect satisfaction.

Steere coils are designed to make maximum use of cooling water. Sherardizing protects them against corrosion. They are in service in all parts of the continent, resisting the chemical action of salt water from two oceans and many varieties of inland waters.

We will be pleased to send complete information, showing design, construction details and specifications to meet any cooling problem or replacement need.

Whatever you purchase from us—a cooling coil or a gas plant—you will find to be low in cost, simple in design and enduring in service.

SEMET-SOLVAY
ENGINEERING CORPORATION
Division Allied Chemical and Dye Corp.
40 RECTOR ST. NEW YORK

SMOOT STEAM ACCUMULATOR

Hudson Valley Coke & Products Co., Troy, N. Y., installation of 9 ft x 30 ft. Smoot Steam Accumulator, Semet-Solvay Engineering Corp., Engineers.

SMOOT STEAM ACCUMULATORS ARE INSTALLED IN MANY OF THE LARGEST WATER GAS PLANTS

The following large water gas plants of recent construction are equipped with SMOOT STEAM ACCUMULATORS and SMOOT CONTROL of COMBUSTION:—

Atmospheric Nitrogen Corp., Hopewell, Va.
Semet-Solvay Engineering Corp., Engineers.

The Brooklyn Union Gas Company—Greenpoint Works, Brooklyn, N. Y.
The Bartlett Hayward Company, Engineers.

Public Service Electric & Gas Company—Harrison Gas Plant, Harrison, N. J.
Public Service Production Company, Engineers.

SMOOT ENGINEERING CORPORATION
136 Liberty Street New York

SMOOT CONTROL

U. G. I. SERVICE AND EQUIPMENT

is now supplied to the gas industry by

UNITED ENGINEERS & CONSTRUCTORS
Incorporated

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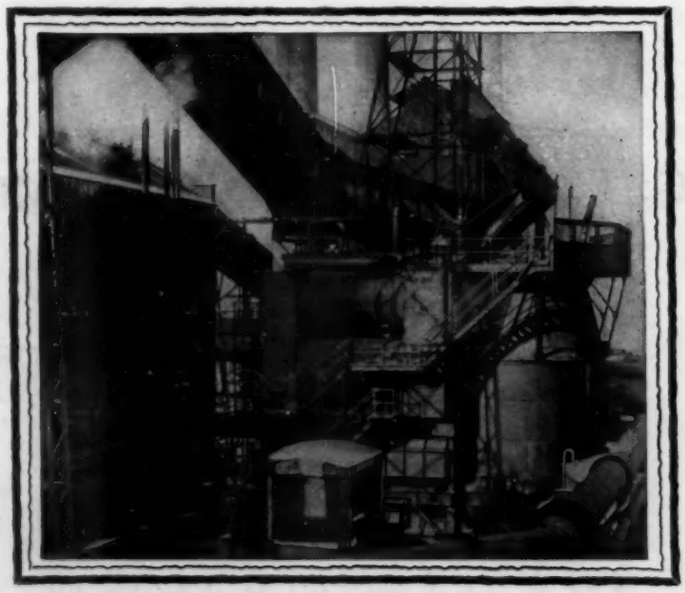
NEWARK, N. J.

DAY & ZIMMERMANN
ENGINEERING & CONSTRUCTION COMPANY
PHILADELPHIA, PA.

With the increased resources and facilities of this enlarged organization at its command, the gas industry may look forward with confidence to receiving

U. G. I. SERVICE PLUS

PRINCIPAL OFFICE — PHILADELPHIA



P. D. Q.

—Stands for Pioneer Dry Quencher. This first American installation of the Sulzer System for Dry Quenching Coke, was made at the Gas Plant of the Rochester Gas & Electric Corporation, Rochester, N.Y. This Dry Quenching Plant has a capacity of 425 tons of coke per day and delivers—better coke and stronger coke—containing no water and a less amount of fines than would be possible with wet quenching. From 800 to 900 pounds of high pressure steam are produced per ton of coke cooled.

A new booklet is available illustrating and describing this installation and many others. May we send you a copy?

Dry Quenching Equipment Corporation

INTERNATIONAL COMBUSTION BUILDING

200 MADISON AVE. NEW YORK — N.Y.

A SUBSIDIARY OF INTERNATIONAL COMBUSTION ENGINEERING CORPORATION

14" deLavaud Line at Loredo, Texas

deLavaud Centrifugal Cast Iron Pipe in large diameters

OVER two and three quarter million lengths of deLavaud centrifugal pipe are now installed, in diameters from 4" to 20".

The many satisfied users find that the ease of handling deLavaud pipe is particularly true in the larger sizes—on account of its self centering bell, and its lighter weight which, of course, is proportionately greater as the size of the diameter increases.

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Press the Button!

Pyro

Radiation Pyrometer gives Quick and Accurate Temperature Readings in Gas Retort Benches, Gas Generators, Coke Ovens and Furnaces of all types.

Pyro Radiation Pyrometer
Weight 25 oz., Length 7 in.
Temperature Range 1000°-3600° F.

One Gas Company Superintendent says--
"Your Pyro Radiation Pyrometer has given us entire satisfaction and has enabled us to carry the heats on our benches at a uniform temperature."

This handy, self-contained instrument has no batteries or attachments. Look through it at any point in a retort, generator, oven or furnace, press the button and the dial gives an instant and accurate reading of the temperature AT THAT POINT,—

No guesswork!
No calculating!
No chance for error!

Speed!

In a practical test on Gas Retorts, 280 readings were made and recorded in less than three and one-half hours,—equal to a reading every forty-five seconds.

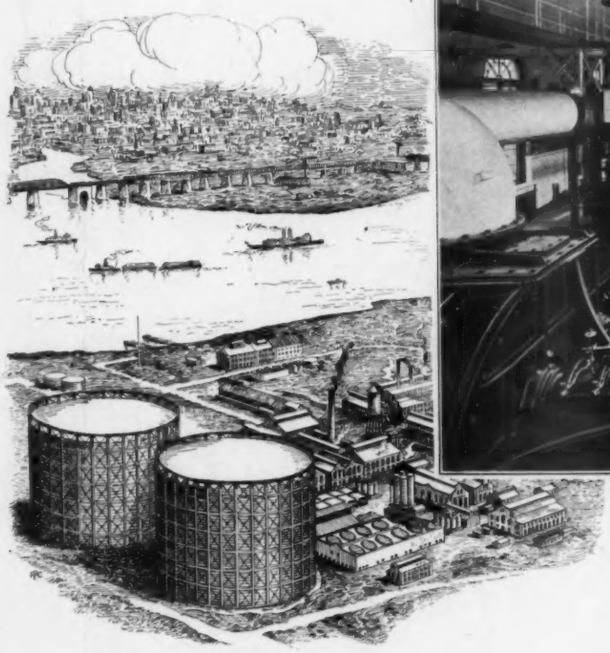
PYRO RADIATION PYROMETER is used in more than 6,000 plants and shops the world over. Among Gas Companies it is giving "entire satisfaction in every respect."

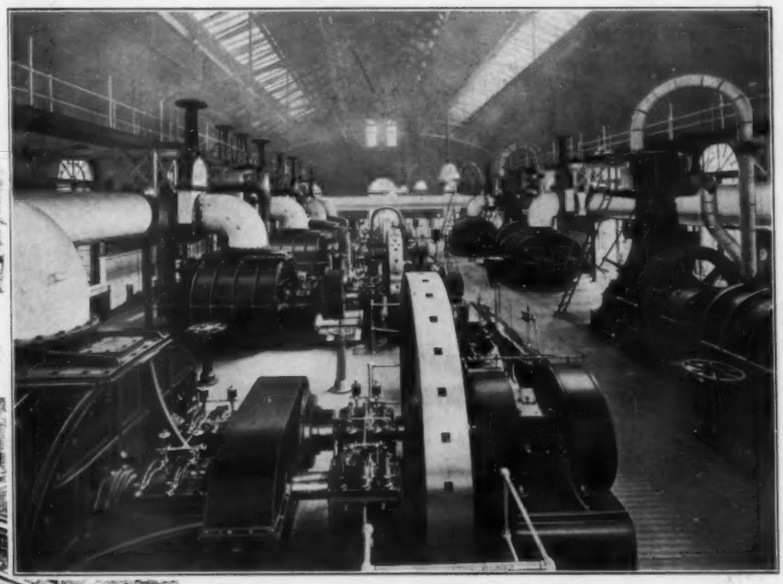
We will send one to any Gas Company
on two weeks' trial. Write now!

The Pyrometer Instrument Co.

74 Reade Street
New York

Confidence Creates Repeat Orders





The Astoria Light Heat & Power Co., Astoria, Long Island, New York, one of the largest plants of its kind, with a capacity of 86,000,000 cubic feet of gas per 24 hours, installed their first three Connersville Horizontal engine-driven gas pumps eighteen years ago.

As the demands for their product increased, one more was added; then two more, and finally two more, making a total of eight; five driven by horizontal engines and three by vertical engines.

A record such as this indicates that Connersville Exhausters contain those essential characteristics that induce users to reorder over and over again, with entire confidence in their faithful performance for the required duty, when an increased gas demand justifies enlargement of their plants.

This is but one of many installations where Connersville apparatus has won its way by sheer merit—send for Catalogue 22 and learn the reasons, or consult our nearest office.

THE CONNERSVILLE BLOWER COMPANY

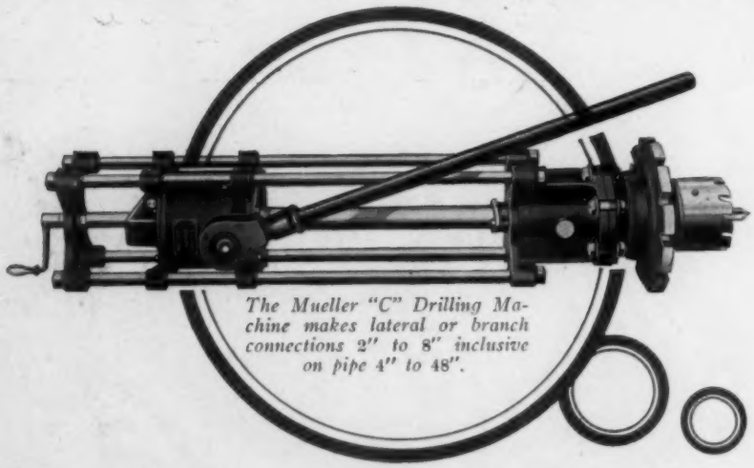
12th Street and Columbia Avenue, Connersville, Indiana

623 Monadnock Block, Chicago
604 Chamber of Commerce Bldg., Pittsburgh
Eastern Service Co., Boston
114 Liberty St., New York

CONNERSVILLE

Blowers • Gas Pumps • Meters • Cycloidal Pumps

THE MUELLER "C" DRILLING MACHINE



The Mueller "C" Drilling Machine makes lateral or branch connections 2" to 8" inclusive on pipe 4" to 48".

A quick clean job!

Profitable operation depends upon a quick clean job. The work must be satisfactory and done as quickly as possible. In the "C" Drilling Machine, Mueller has provided a quick, efficient and easy means for making lateral or branch connections to gas mains.

The "C" machine gives the greatest possible handling ease without losing a bit of its working efficiency.

Lightness and strength is the result—a machine that two men handle easily, without straining, while one man can operate it if necessary.

With the careful attention to detail that *is* Mueller Quality, all working parts are encased in dust-proof housings and run in heavy grease. The automatic feed prevents overfeeding the drill and one main shaft does for cuts of all sizes. The various sized drills are fitted on this shaft quickly and without difficulty.

Write for further details and prices.

MUELLER CO. (*Established* 1857) **Decatur, Ill.**

Branches: New York, Dallas, San Francisco, Los Angeles
Canadian Factory: MUELLER, Limited, Sarnia

MUELLER

LOOK OVER THESE RECORDS:

Made by the Hope Engineering Company

On the Dixie Gulf Gas Company Line with Smithsteel Gas Line Pipe

(1) On Dec. 9 one crew laid 12,810 feet of 22" pipe in 9½ hours.

(2) On Dec. 24 one crew laid 13,650 feet of 18" pipe in 9½ hours.

(3) 296 miles were laid in 91 days by 4 crews.

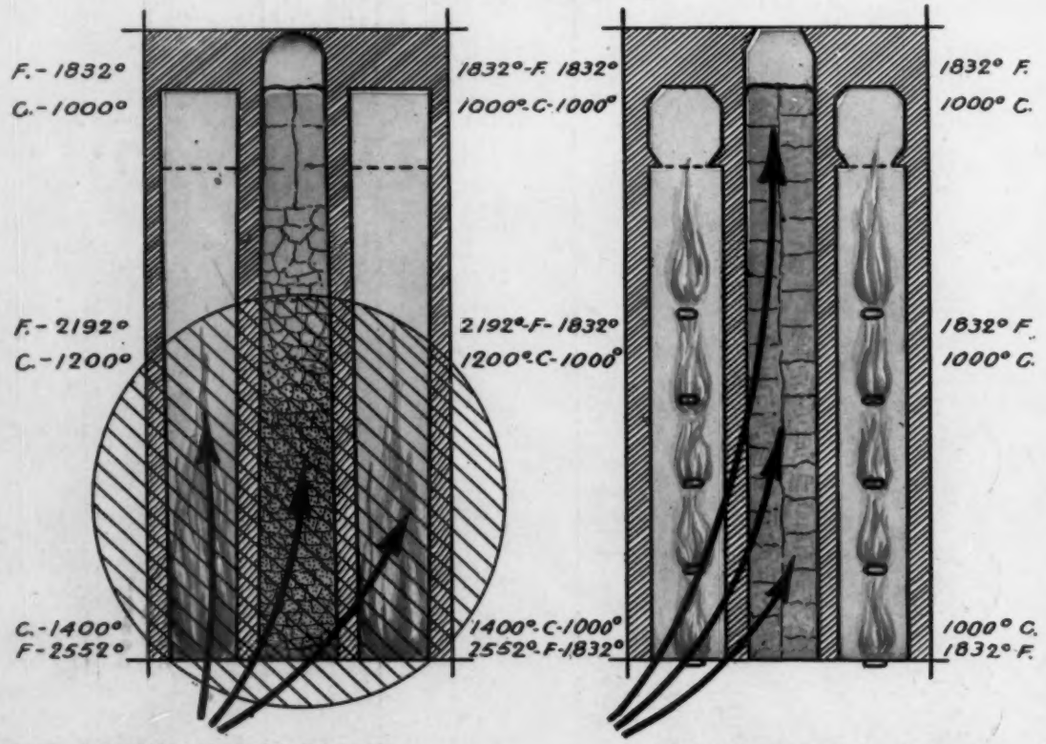
A. O. SMITH CORPORATION
Oil & Gas Field Products Division
General Offices—*Milwaukee, Wisconsin*
District Offices at New York City, Pittsburgh, Tulsa, Houston, Los Angeles

SMITHSTEEL GAS LINE PIPE

THE PROOF!

Showing the Efficiency of the STILL SYSTEM of MULTI-STAGE COMBUSTION

The demonstration plant, as indicated below, has been in operation for the past six months and is 19 feet 8 inches high



THE COMMON ONE-FLAME METHOD

Note how combustion is practically limited to lower 5′ to 6′ 6″, and only occasional tips of flame reach 7′ 6″.

—and then—

THE CARL STILL MULTI-STAGE COMBUSTION SYSTEM

Note how in the Still System the heating gas is stretched over the entire height of the heating flue—19′ 8″.

Furthermore—A 40% throttling of the volume of heating gas did not in the least affect the uniformity of the Still System, while the one-flame process was confined to parts in the immediate vicinity of the sole of the flue.

Other strong points of the Still System are:
Excessive Heating eliminated. Utmost protection of Distillation Gases. Highest yield in By-products, and Free Flowing Tar. Fastest operation of ovens and largest possible thruput. Lowest consumption of fuel gas. Unlimited oven height. Maximum safety and minimum labor requirements in operation. Greatest efficiency.

Let our Consulting Engineers give further details

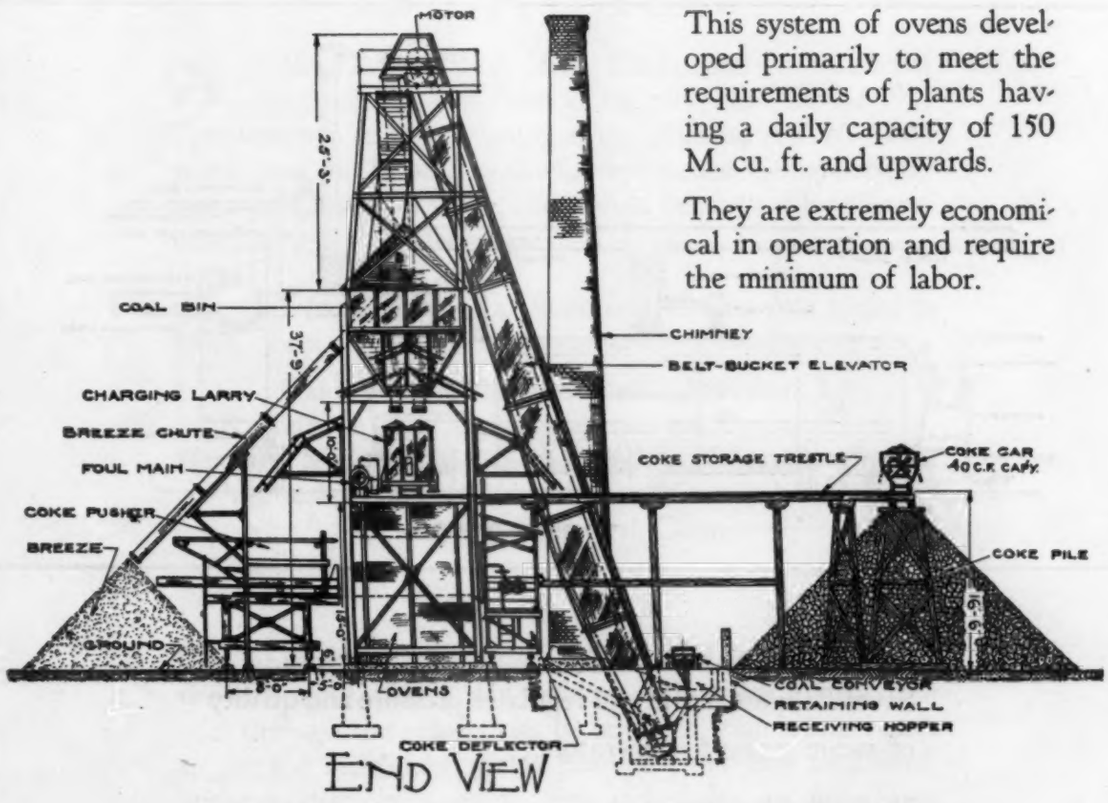
CARL STILL CORPORATION

114 LIBERTY STREET, NEW YORK

For Small and Medium Size Gas Plants

The UNIT TYPE

HORIZONTAL GAS *and* COKE OVENS



END VIEW

This system of ovens developed primarily to meet the requirements of plants having a daily capacity of 150 M. cu. ft. and upwards.

They are extremely economical in operation and require the minimum of labor.

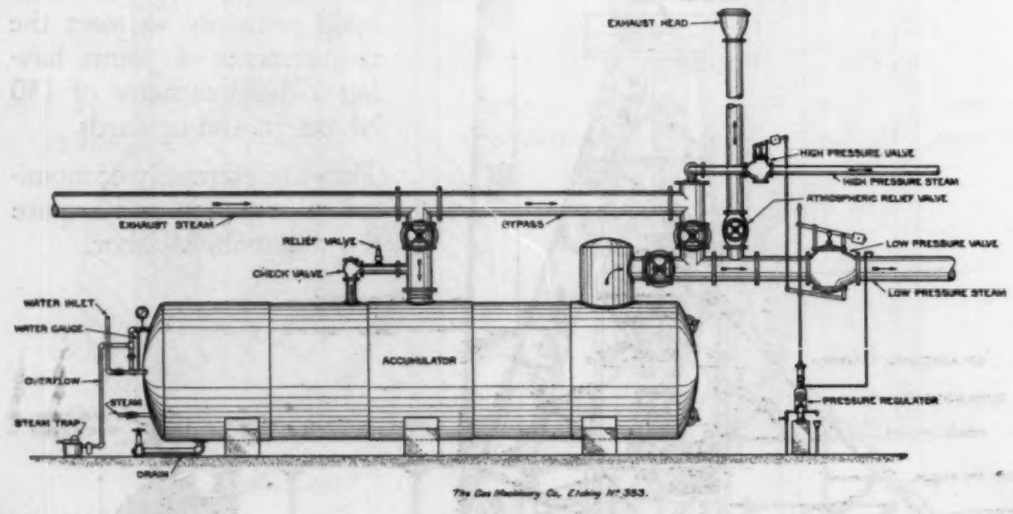
Write us for Special Bulletin and full information regarding plant now operating

THE IMPROVED EQUIPMENT COMPANY

24 STATE STREET *Engineers-Builders* **NEW YORK CITY**

Exhaust Steam ACCUMULATOR

For Supplying Steam to Water Gas Generators



Saves Exhaust Steam and regulates pressure and quality of steam going to generators.

Hydraulically operated steam valves for generators and complete installations furnished erected.

THE GAS MACHINERY COMPANY
CLEVELAND, OHIO

GLOVER-WEST *Vertical Retorts*

A
28 DAY TEST

A SUBCOMMITTEE of the Carbonization Section of the American Gas Association completed for the 1927 Convention a series of plant tests inaugurated in 1926. Full particulars can be seen in the Carbonization Committee reports for these two years, and should be studied by all contemplating plant extensions.

The Glover-West plant at Stamford, Conn., was tested in 1927. See:

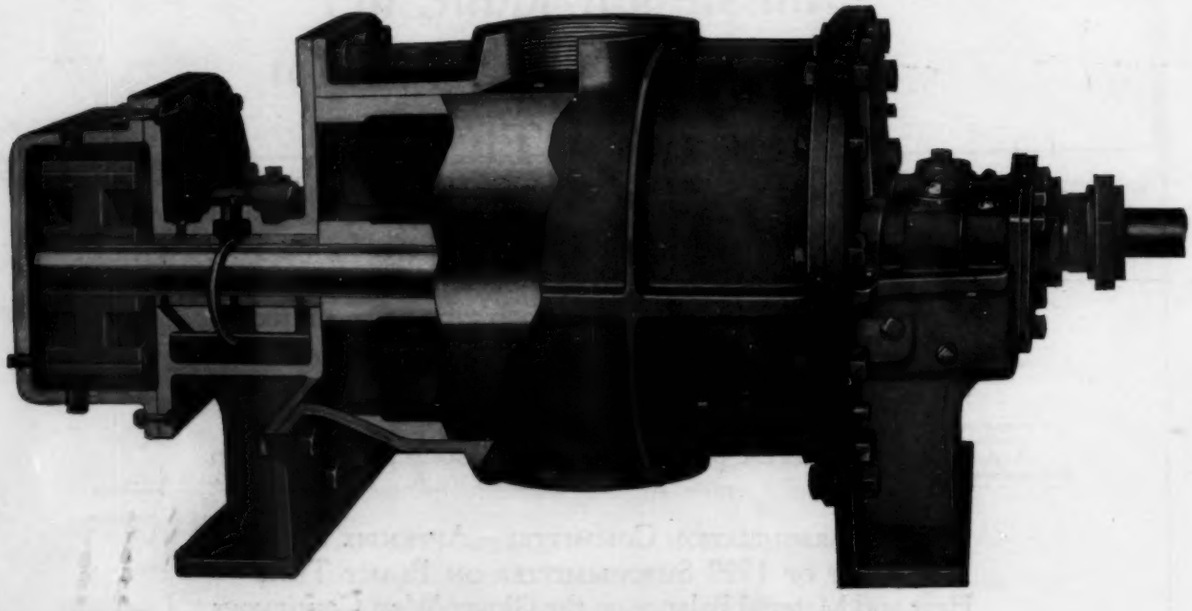
CARBONIZATION COMMITTEE—APPENDIX 1
REPORT OF 1927 SUBCOMMITTEE ON PLANT TESTS
Heat and Material Balance on the Glover-West Continuous Vertical Retorts of the Stamford Gas and Electric Company, Stamford, Conn.

The heating arrangements of Glover-West benches with their control facilities, and the ease with which the speed of coal through the retorts can be adjusted, enables operators to get the maximum yields possible from any coal used, without disturbing labor time schedules or sacrificing efficient fuel results.

WEST GAS IMPROVEMENT CO.
Builders of Coal Gas Plants
441 Lexington Ave. New York.

ROOTS

Roots Acme Gas Pump for Industrial Services



Roots Acme Construction—

Look at Roots sturdy construction!

Extra wide faced, oversize gears securely locked on shafts operate in totally enclosed, oil-tight, dirt-proof, one-piece housing.

Accurately milled and carefully balanced impellers are finished over entire external surface.

Exceptionally long, interchangeable, one-piece, wear-resisting, protected bronze bearings with loose ring oiling and grooves are finished all over to standard dimensions.

One-piece, properly ribbed, bored and finished close-grained grey iron case carries inlet and outlet connection cast integral for extreme simplicity and rigidity.

Only one heavy duty stuffing box is required, as bearings are positively sealed.

Complete information in our Bulletin 31-B-2.

We also manufacture Roots Gas Meters, Blowers, Liquid Pumps, Vacuum Pumps and Accessories.

The P. H. & F. M. ROOTS CO.

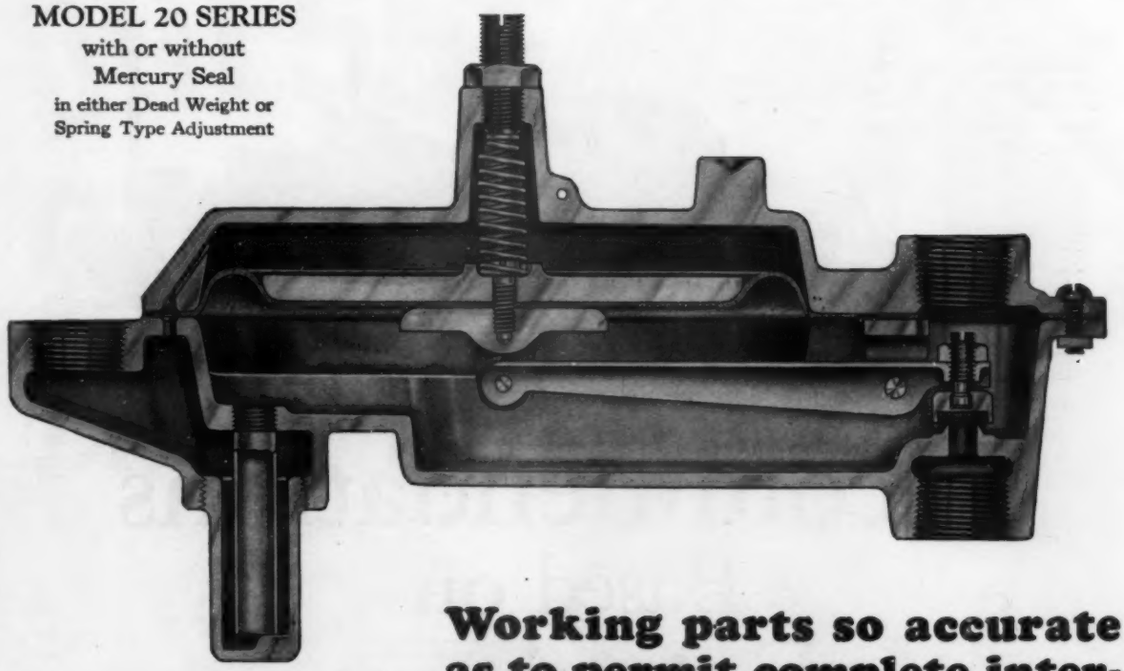
CHICAGO Peoples Gas Building

CONNERSVILLE, INDIANA

NEW YORK 120 Liberty Street

Originators of the Double Impeller Rotary Principle

MODEL 20 SERIES
with or without
Mercury Seal
in either Dead Weight or
Spring Type Adjustment



Reynolds Products

for all kinds of Pressure Reduction—for either artificial or natural gas.

Governors—
Intermediate Pressure
Triple Outlet
Holder
Toggle Type Street

Regulators—
High Pressure Service
Low Pressure Service
Intermediate Pressure
High Pressure Line
Single and Double
District Station

Valve—
Automatic Quick-Closing
Anti-Vacuum

COMPANY MEMBER OF AMERICAN GAS ASSOCIATION

Working parts so accurate as to permit complete interchangeability in shop • • •

also assuring perfect location of valve to orifice

Model 20 Series—a companion Regulator to the Model 10 Series—was designed to increase the efficiency of the plant that services all equipment in the shop. Increased efficiency in operation—all working parts so accurate that they are completely interchangeable*—means small service stocks. All working parts are rust-proof, reducing need of attention. Engineers will appreciate the accurate, efficient Reynolds *Model 20* Series and the cost will interest purchasing agents. Complete data on Reynolds Service Regulators on request.

*Ordinary repair parts for series 20 are interchangeable with parts of the Model O Regulators formerly known as Combination and Old Style. We will continue to supply plants desiring old-type service regulator.

Reynolds
Gas Regulator Company
Anderson, Indiana

Established 1892

Representatives:
EASTERN SERVICE COMPANY, Boston, Mass.
F. E. NEWBERRY, Avon, N. J. THOS. C. CORIN, Detroit, Mich

Syracuse Lighting Company, Syracuse, N. Y., showing part of Robins coal and coke handling equipment.

Recommendations Based on *Experience*

THE success or failure of coal and coke handling systems is disclosed by the operating cost records.

What they shall disclose depends largely, if not exclusively, upon the layout and the selection of equipment.

It is but logical then to expect the best system—which means the lowest cost system—from those who have made coal and coke handling an engineering specialty.

To this small group belong Robins Engineers. Their recommendations are based on successful experience.

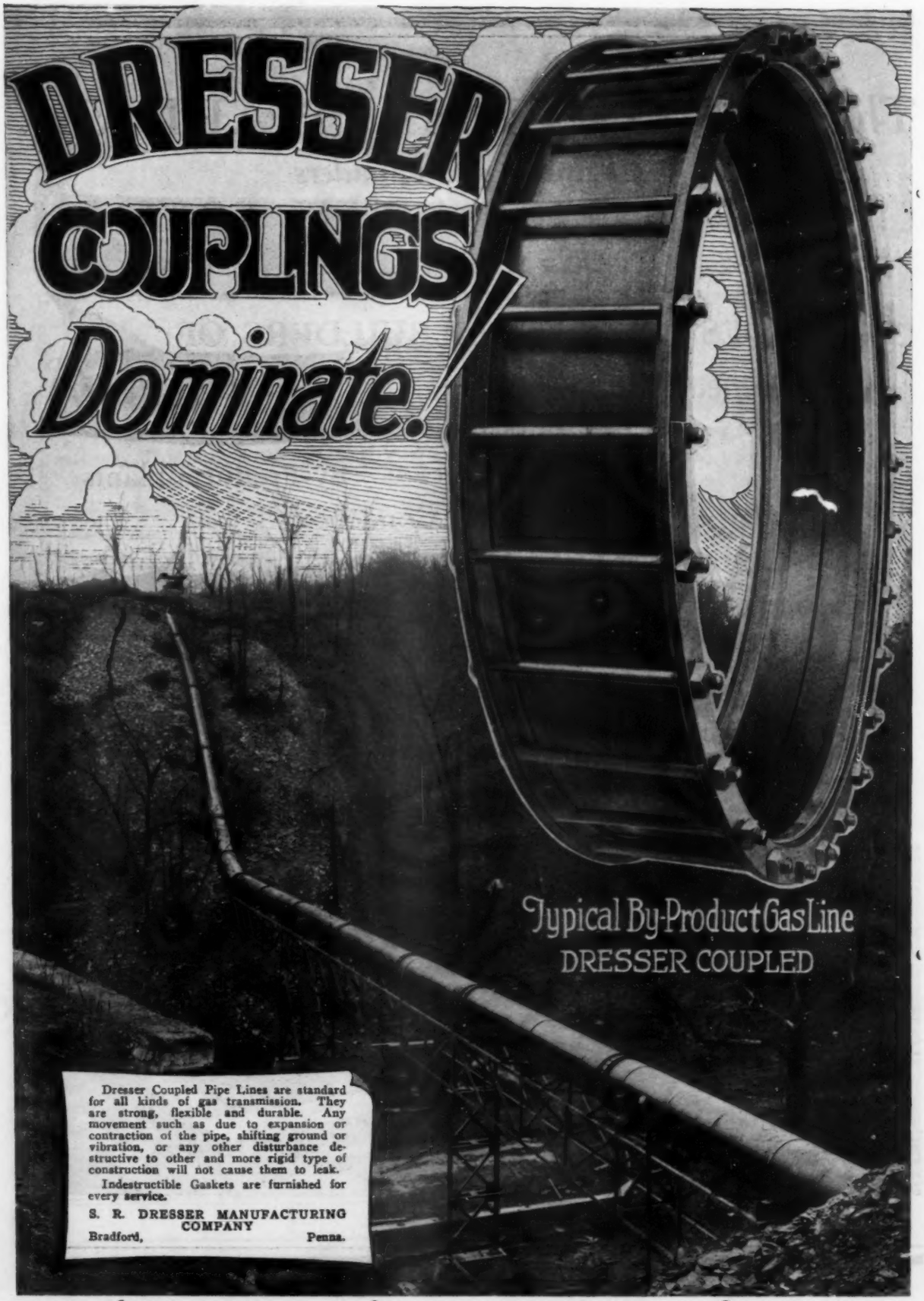
A Robins system in your plant will be a low cost system.

ROBINS CONVEYING BELT COMPANY
15 PARK ROW, NEW YORK, N. Y.

Chicago Boston Philadelphia Pittsburgh Los Angeles
Agents in Other Principal Cities

Conveying and Elevating Equipment
Stocking and Reclaiming Systems
Crushing and Screening Equipment

MATERIAL HANDLING
ROBINS
EQUIPMENT



Dresser Coupled Pipe Lines are standard for all kinds of gas transmission. They are strong, flexible and durable. Any movement such as due to expansion or contraction of the pipe, shifting ground or vibration, or any other disturbance destructive to other and more rigid type of construction will not cause them to leak.

Indestructible Gaskets are furnished for every service.

S. R. DRESSER MANUFACTURING COMPANY

Bradford, Penna.

The BARTLETT HAYWARD CO.

Engineers and Founders

BALTIMORE and NEW YORK

DESIGNERS AND BUILDERS OF:

Carburetted Water Gas Plants
Complete Coal Gas Plants
By-Products Plants
Salt Water and Fresh Water Condensers
De Brouwer Charging and Discharging Machines
Purifiers - Steel Tanks - Shaving Scrubbers
Vertical Waste Heat Boilers
Gas Holders

View of Main Plant, Located at Baltimore

AMERICAN
GAS JOURNAL
Established 1859 Pioneer of the Gas Industry
Including GAS INDUSTRY Est. 1900.

HENRY M. RILEY, *Editor*

Save the Surface and You Lose All

WHILE IT is generally agreed that we are nowhere near saturation, still much of our increase in business will be obtained only by dint of hard work, against tightening competition.

We should derive but little satisfaction in feeling that we haven't as yet scratched the surface. Rather, the thought should serve as a goad to edge us closer to the saturation point. It is perhaps a fact that the nearer we approach saturation, which is nothing to be feared, the more smoothly will we carry on.

Courtesy Conner Company.

WE HAVE available some mighty likely rasps which, if applied with vigor, will be instrumental in turning over the surface crust and unearthing some business of more than passing magnitude.

To merely sit by and bemoan that the domestic cooking load is marking time due to the changing habits of the people is backward looking, to say the least. Let us hold what we have in this regard and scratch everlastingly for more. Heat controlled ovens, colored ranges, home service activity and the like will accomplish a lot.

Thousands of dusty, sooty fireplaces yawn for the various artistic, reliable heaters designed for such use. Incinerators are a wanted item. The mediocre efforts of many laundries furnish a strong peg upon which to hang a large volume of home laundry equipment sales. And what a highly polished surface water heating and house heating offer for harrowing and cultivation! Water heating, especially, constitutes a tempting field for sales exploitation. Salesmen should reap a large reward from the scratching of such a surface.

AS FOR industrial sales, the surface presented is only ready for polishing; scratching will have to tarry yet awhile.

The appliance manufacturers are supplying us with equipment that leaves nothing to be desired, our service and product have been raised to a high degree of performance and dependability; we are well equipped with brains; but, to really accomplish some high-powered surface scratching there will have to be applied much of the proverbial "elbow-grease" on the part of the salesmen and all others concerned.

Let us hack and slash at this sales surface; let us see what it feels like to be nearly saturated. Let us dig in and go after sales.

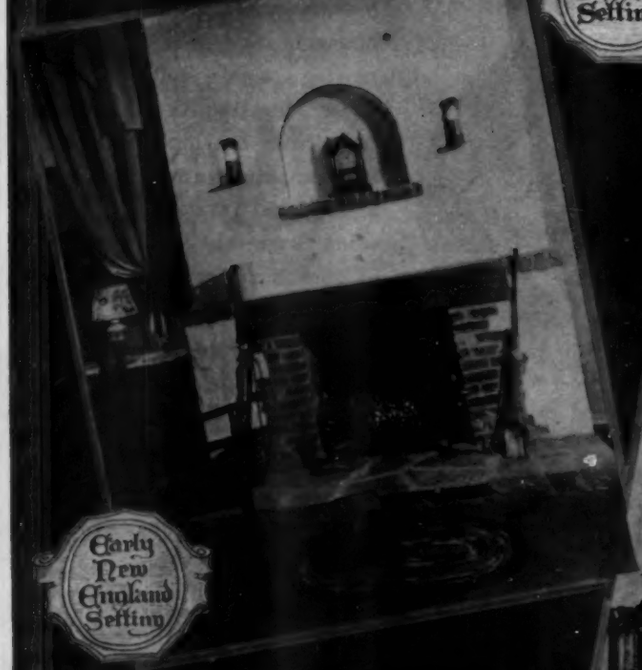
The Artful Aid of Atmosphere

The selling of appliances and equipment for the home depends today more than ever before on the setting. This fundamental of merchandizing is well recognized in all trades and is actively employed in the show-rooms of many public utility companies.

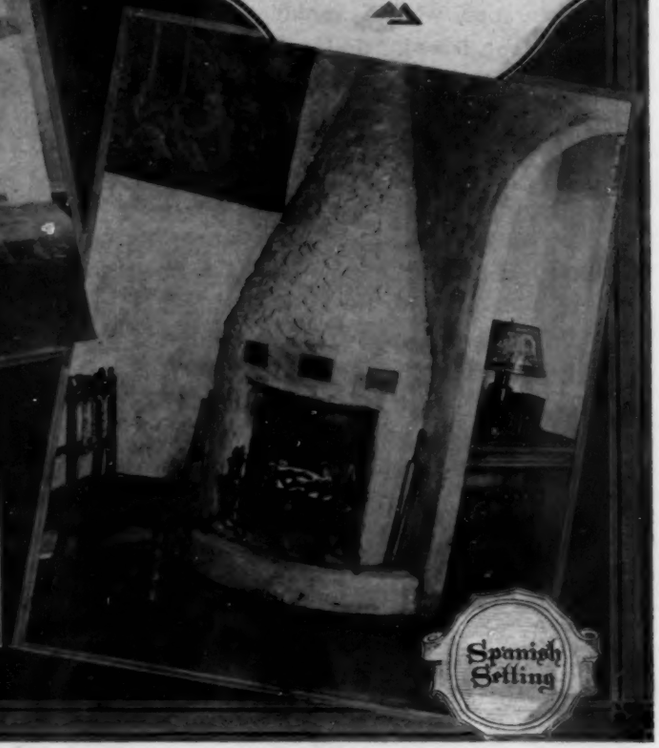
The model kitchen is universally accepted as a means of creating atmosphere for the sale of ranges and water heaters. This same principle should be more liberally employed in the display of space heaters such as ornamental fire places, wood fires and various other types of radiant heaters.

Much thought and careful attention to detail has been given in erecting the several types of fire places shown here. Any of these can be reproduced without great expense in the show-room of a gas company as a permanent feature or as a window display and would greatly stimulate sales.

Old English Setting



Early New England Setting



Spanish Setting

The Old English setting follows out the safe plan of atmosphere. Here is shown a gas Coalfire designed to be placed on andirons which the owner may already have.

A corner setting shows a Spanish fireplace in buff plaster with inlaid colored tiles. A gas "Woodfire" burns realistically on the hearth.

Solid construction and real comfort are depicted in the Early New England setting with its realistic coals.

Photographs through courtesy of Homestead Heater Co. Inc. Newark N.J.

Grading Gas Companies' Service

System used by Illinois Commerce Commission for appraising service rendered public by gas utilities

By C. H. White

Assistant Engineer, Illinois Commerce Commission

FOR several years the gas utilities have discussed service at their conventions, the various utility trade magazines have carried articles concerning the improvement of service and most companies have informed their customers in various ways that they were furnishing "service" in addition to gas. The consumer, however, often expresses himself in the belief that the service is not satisfactory. A state utility commission receives the complaints of many of those consumers who do not believe they are receiving good service. Some of these complaints are justified and others are not, so that it is necessary for such regulating bodies to supervise the service as well as other activities of the utilities with the result that most of the States have rules setting forth the standards of service which the utilities are required to follow.

In order to secure the rendering of service according to its service rules, the engineering section of the Illinois Commerce Commission has engineers in the service division who make a careful inspection of the service rendered by each utility in the State. These inspections if conducted upon the basis of determining simply whether or not a utility is rendering service according to the Commission's rules, give no comparative value whereby the service rendered in one community might be compared with that in another. To overcome this unsatisfactory condition, grading of gas service was instituted about 1921.

The grade which is assigned depends upon the actual conditions found as well as the records kept by the utility. One hundred per cent is considered as a perfect condition, but as is well known, service cannot be rendered without an occasional defect. Because of this fact the grade of 100 per cent is the perfection of service set up to represent that grade to which a utility should strive to attain. As it would be impossible to attempt to assign a grade without considering the various conditions of service, these conditions were considered and graded separately. However, the problem of comparative value of the several conditions becomes the next problem. A utility may render service which is reasonably satisfactory but have poor records, or the records may be very complete and accurate but the service very poor, so it was found necessary to assign the grades on actual service conditions and on records separately. This was satisfactorily handled by the weighting of the grades according to figure 1, in which is shown an example of a final grade computed from the grades assigned to the individual items considered.

When the grading system was first used, the inspector often made many notes, but did not follow any definite plan, with the result that several sheets of data would be obtained without having secured sufficient information on each item to be covered. To overcome this difficulty the forms (shown in Figs. 2 and 3) were printed on one sheet. It will be noted that space is provided for comments on each item to be graded. From the utility's pressure survey the inspector also records the location, date, maximum and minimum pressure with time of occurrence, the difference between the maximum and minimum and the percent of variation from the minimum are recorded and calculated on a sheet suitable for the purpose. The data from the utility's record of heating value is entered on another form, printed on a separate sheet. By the use of these three pages sufficient space is provided for most of the data and com-

DEFINING PERFECT SERVICE

Perfection is hard to define and still harder to reach. But the Illinois Commerce Commission has believed that both the public and the utility companies under its jurisdiction will benefit from an attempt to rate the quality of service rendered on a numerical system.

The scheme which is followed by that Commission and its significance with respect to service is clearly set forth in the accompanying article by one of the engineers who is actively engaged in applying the system to gas companies.

Executives in other jurisdictions can well consider self analysis along similar lines to see how their operations would rate if judged impartially from the standpoint of a public official. Perhaps such scrutiny will encourage managements and operators alike to a more efficient, as well as a more acceptable, standard of service. —Editor.

ments as well as grades in practically all cases.

Pressure of First Importance

In rendering gas service satisfactorily it is of first importance to supply gas at a uniform pressure and for that reason a weight of 30 out of a

Conditions of Service	Weight	Grade	Weighted Score
Pressure (Including Interruptions)	30	81	2430
Heating Value	15	83	1245
Handling of Complaints	10	93	930
Meter Testing	7	96	672
Purity	5	75	375
Consumer's Attitude	4	92	368
Construction and Maintenance	3	96	192
Adequacy of Capacity	3	89	178
Provisions for Emergency	3	96	192
Adjustment of Bills	1	94	94
Billing	1	95	95
Extension Policy	1	93	93
Furnishing New Service	1	92	92
Records			
Pressure Surveys and Records	5	95	475
Record of Complaints	4	92	368
Record of Heating Value	3	96	288
Record of Purity	2	90	180
Record of Meter Tests	2	95	190
Record of Meters	2	88	176
Record of Interruptions	1	96	96
		Final Grade	87.29

Fig. 1—Specimen of service grading

total of 100 was assigned to the factor of pressure. In a low pressure system a company should take a pressure survey by means of recording pressure gauges at locations over the territory supplied in such manner that no section could experience a variation in pressure regularly without that variation being indicated on one or more charts. From a study of the matter, charts covering a 24-hour period or longer appear more desirable than charts or readings taken only during peak loads. The data from survey charts properly taken is summarized according to a table prepared for the purpose of determining the grade. This table, which is shown in Figure 4, was constructed for the purpose of supplying a method by which the same grade would be secured in similar situations and thereby secure the comparative grades.

When gas is supplied by means of individual house regulators, the grade is based upon the company's care of its regulators, the number of complaints indicating faulty regulators and the maintenance of a pressure above the minimum at which the regulators as set will operate. A survey on high pressure distribution should be made by taking 24-hour charts at or near main ends on the H. P. side of the regulator in conjunction with charts taken at some centrally located point where a recording gauge is kept in continuous use. When the high pressure varies over wide limits above the minimum, this is also considered.

Pressure Surveys

Some companies have the belief that a comprehensive pressure survey is unnecessary and that the expense is unwarranted. Other utilities make a conscientious effort to determine the pressure conditions and make their extensions and enlarge the existing mains according to the conditions which the surveys indicate. The writer has had the opportunity to compare the service rendered by the two types of companies and invariably the latter has the best service conditions. Companies of the former type have many complaints which might have been avoided if more attention had been given to pressure conditions.

The charts taken in a pressure survey should be filed systematically so that a chart taken at a certain location may be readily found. An additional practice which has proven very satisfactory is to enter on a map of the system the minimum pressure and the percent variation indicated at each point where a chart has been taken. The grade for pressure survey records is determined by observation of the completeness of the survey and the accuracy of the records.

Heating Value Rated

The factor of heating value has a weighted score in the grading system of 15 out of a total of 100 as it is considered to be second to pressure in importance. Two conditions are important in the consideration of this item. One is the monthly average and the other the variation. For grading, the daily averages of the last six months previous to the inspection are recorded and monthly averages are calculated. If any of the monthly averages are below the required standard, the number of B.t.u. found to be below on each average is added, and for every 2 B.t.u. in the total one per cent is deducted.

TABLE SHOWING METHOD OF CALCULATING GRADE FOR PRESSURE

Charts Taken are divided into Four Classes according to Percent Variation from the Minimum, as Follows: 0 to 50; 51 to 100; 101 to 135; 135 up. The Average Percent Variation and Average Minimum For each Class is determined and the deduction according to these Averages added and the Sum Subtracted from 100. This gives the Grade of Pressure.

Minimum Pressure						Percent of Consumers Affected																		
15	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10	11 to 15	16 to 20	21 to 25	26 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80	81 to 90	91 to 100
Percent Variation						Deduction																		
No Grade Above 75			36	36	30	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
	90	50	42	38		0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2
	42	58	46	42		0	0	0	0	0	1	1	1	1	1	1	1	1	1	2	2	2	3	3	3	3
	53	66	51	45		0	0	0	1	1	1	1	1	1	1	1	2	2	2	3	3	3	3	4	4	
93	65	75	55	48		1	1	1	1	1	1	1	1	1	1	2	2	2	3	3	3	4	4	5	5	
70	79	86	62	54		1	1	1	1	1	1	2	2	2	2	3	3	3	4	4	5	5	6	6	7	
98	98	100	72	60		1	1	1	1	2	2	2	2	2	3	3	4	5	6	6	7	8	8	9	10	
135	135	120	88	71		1	1	2	2	3	3	3	4	4	4	5	6	7	8	9	10	11	12	13	15	
165	165	140	100	81		1	2	2	3	4	4	5	5	5	6	6	8	9	11	13	14	15	17	18	20	
200	200	160	115	92		1	2	3	4	4	5	6	6	7	7	8	9	12	14	16	18	20	21	23	25	
235	235	180	133	106		2	2	3	4	5	6	6	7	7	8	9	11	14	16	19	22	24	26	28	30	
267	250	200	150	108		2	3	4	5	6	7	7	8	9	9	11	13	16	19	22	24	26	28	31	35	
300	300	220	167	115		2	3	4	6	7	8	9	9	10	11	13	15	18	22	25	28	31	33	36	40	

Grade Letter	No. Charts Taken	% of Total	Av. Minimum Pressure	Av. Variation	Deduction	No. to Be Deducted from 100 = Grade Assigned
A	18	51	4	88	-5	
B	18	51	4	88	-5	
C	11	32	35	125	-8	
D	2	6	8	180	-5	
		100			-19	CHK 1927

Fig. 4—Guide for grading pressure

In determining the deduction for variation, the difference between the minimum and maximum average daily heating value for each month is determined and the average month is calculated for the several months recorded. For each 6 B.t.u. in the average thus obtained, one per cent is deducted. The two deductions are added together and subtracted from 100, giving the grade assigned for heating value.

The records as well as the methods used in making the tests are carefully observed and checked. In cases where tests are not taken with the re-

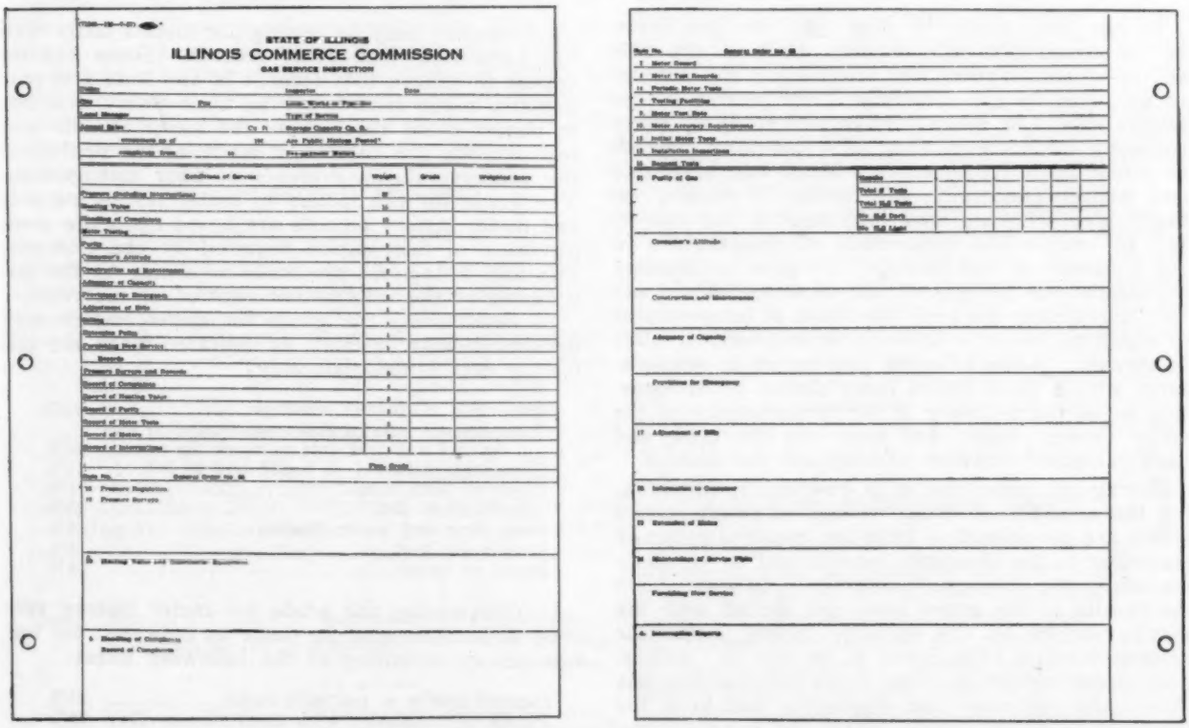
quired frequency, or where the tests as taken are inaccurate, a further deduction is made according to the violations and discrepancies. The grade for record of heating value is based upon the accuracy and completeness of the data kept by the company.

Judging Complaint Service

Complaints constitute one of the ways whereby a company may determine whether or not its service is satisfactory. Some consumers will always make complaint upon the slightest provocation, whether real or imaginary, while others will find fault only when the service is extremely poor. Those who neglect to report any failure of the company's service often complain to their neighbors about the company and cause additional dissatisfaction as the result. Many companies operating in Illinois have found considerable advantage in making a determined effort to correct all cause of complaints and making it known that they welcome the information when the service is unsatisfactory. The proper handling of complaints depends upon promptness of correction, courtesy and tact of employees and the action of the company in preventing the recurrence of the cause of complaint.

In assigning a grade for handling of complaints the promptness of eliminating conditions complained of is given consideration to the extent of 50 per cent of the grade because an unfavorable attitude is often caused by laxity on the part of the company in investigating complaints and sometimes results in complaints continuing uncorrected. The courtesy and tact of employees is given consideration to the extent of 30 per cent of the grade, as it is desirable that employees give the consumer due consideration and refrain from assuming an antagonizing attitude. The employee handling a complaint represents the company so far as the consumer is concerned and should continually keep in mind that the company is rendering a service as well as supplying gas.

The action of a company in preventing recurrence of an unsatisfactory condition determines the remaining 20 per cent of the grade. Some companies follow the policy of correcting unsatisfactory conditions in a temporary manner apparently preferring to make frequent calls instead of getting at the source of the trouble and end the complaint for good. Where the policy is to make temporary correction, the consumer becomes dissatisfied and turns to other sources of heat. The result is that the company loses revenue which might have been gained and has a dissatisfied consumer who takes advantage of the company at every opportunity.


STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION
GAS SERVICE INSPECTION

Figs. 2 and 3—Obverse and reverse, inspectors data forms

Complaint Records Expected

In order to handle complaints properly and keep the cost at a minimum, a record should be kept giving complete information concerning each complaint received. In assigning a grade for the factor of complaint records, each of the items required by the commission is considered according to its importance. The relative importance of these items is considered to be as follows:

How cause of complaint was remedied	5%
Condition found by investigator	20%
Name and address of complainant	15%
Date and time complaint is received	15%
Date and time of investigation	15%
Name of investigator	5%

In checking the record of complaints if one of the items mentioned is omitted or the information is inadequate a deduction is made according to the violation or discrepancy.

Meter Testing Practice

It can very easily be said that the gas meter is the company's cash register, as it is the only source of information for determining the amount of gas used by the consumer. The testing of gas meters should be given very careful study by every company since the revenue of a company depends so much upon its accuracy. Much has been said and written concerning the testing of meters, yet many men who are well informed on the subject fail to realize the importance of temperature in the accuracy of the testing. To give satisfactory registration of gas passed the accuracy should not vary appreciably between the limits of temperatures to which the meter is liable to be subjected to while in service. When adjusted and tested at temperatures within those limits there should be no question as to the accuracy if the temperatures of the meter prover, water, and room are the same and have remained constant throughout the test.

During an inspection it is customary, in checking the accuracy of meter testing, to retest meters which are considered to have the required accuracy according to the company records and to be ready for use in the consumer's premises. In some cases the results of the retest have not agreed with the results shown on the records. Some times this discrepancy has been found to be due to carelessness of employees; at other times investigation has shown that although the employees had kept the temperature of the prover water the same as that of the air, a different meter temperature had caused the testing to be inaccurate.

A thermometer placed in the outlet of the meter during the test usually indicated that the meter temperature is different from the temperature of the prover water and air. In shops where testing of meters proves to be satisfactory, the company has invariably provided a shop equipped so that the temperature of the testing room is not subject to variation and that the meters to be tested have been allowed to come to the temperature of the room before being proved. The condition of the shop and equipment as well as the character of the repair work are carefully noted. When it has been found that the methods and attention given to the testing are unsatisfactory, a deduction up to 20 per cent may be made and if the equipment and facilities are insufficient, an additional deduction up to 15 per cent may be made. However, the factor of meter testing consists not only of the conditions mentioned, but is influenced by the action of the company in making tests as required by the Commission.

If new or adjusted meters have not been tested before being placed in service, a deduction up to 25 per cent may be made according to the seriousness of the violation. Should the periodic testing prove to be behind schedule, a deduction of 1 to 4 per cent for each per cent of meters overdue for test is made according to the length of time overdue. Complaint records are examined in conjunction with the meter records to determine if request tests are made willingly and promptly. Should the company be violating the requirements in this matter a deduction up to 15 per cent may be made.

Full Records Credited

A company may be testing the meters fairly well but have very inadequate records. Some utilities appear to believe that records of any kind and particularly meter records are an unnecessary evil, but in almost every case where the meter records and test records are carelessly made up or neglected, the property shows evidence of poor management. The grade for the factors of meter testing records and meter history records are based upon the completeness of information required by the Commission and deductions are made according to the importance of the information omitted or incorrect.

In determining the grade for meter test records deductions may be made as indicated when the following data is unsatisfactory:

Recording of prover readings	35%
Temperature, rate of flow, registration of meter and sufficient data to check the test	20%
Percentage accuracy as found and as left	10%
Entry of both runs	5%
Identification data	15%
Date, time and meter reading	5%
Reason for test	5%
Name of tester	5%

In determining the grade for meter history records, deductions may be made as indicated for unsatisfactory recording of the following items:

General results of test with dates	25%
Places of installation with dates	25%
Identification number	15%
Reason for removal and date	15%
Meter test summaries	10%
Repairs and final disposition	5%
Date of purchase	5%

When the testing is inaccurate test records are false and the history record meaningless, so that the accuracy of the meter testing affects three different grades. It appears that some companies keep records only because it is required. When complete records are kept such unnecessary expense may be avoided and the meters maintained more satisfactorily. An inspector not only checks the testing and the records but gives all assistance possible in improving the conditions found.

Gas Purity Specified

The factor of purity is graded according to the records maintained by the company. In the State of Illinois all companies are required to make daily lead acetate stain tests for presence of H_2S and to preserve the test papers. For the purpose of grading, the records of the previous six months are considered. When the tests show presence of H_2S the per cent is calculated and for each per cent

a deduction is made of from 1 to 4 points, according to the darkness of the stains.

Companies whose sales exceed 50 million cu. ft. per year are required to make tests for the determination of total sulphur at least once a week. When the records of total sulphur tests show that the gas at times contains over 30 grains per hundred cu. ft., which is the limit allowable, a further deduction is made according to the seriousness of the violation. An inspector quite often makes tests for H_2S and at times finds a decided stain at the end of the one and one-half minute test, while the company records have been consistently free from stain. Such a condition throws much doubt upon the records and a further deduction is made according to the situation. The grade for record of purity is determined by the completeness of the record and the apparent accuracy of the tests taken.

Customer Attitude Important

An inspection of gas service made without any attention to the attitude of the consumers would be incomplete, because it often reflects some phases of company's treatment which might not otherwise come to the inspector's attention. In spite of the fact that it is rather difficult to arrive at the grade for this factor, a system was devised which provides a fairly satisfactory method. The city officials and several representative consumers are interviewed as to the service rendered and their attitude toward the company. Particular care is taken in making these interviews to keep from influencing the consumer either in favor of or against the utility. The grading on this factor is as follows:

Class	Attitude	Grade	Instructions for Classification
A	Excellent	95-100	Practically everybody satisfied and commending company for its service.
B	Good	85-95	Where those interviewed have practically no complaint; neither do they have any particular commendation to make, showing a general spirit of indifference.
C	Fair	70-85	Some complaint. A general feeling that service is not quite what it ought to be.
D	Poor	40-70	Attitude generally unfavorable. A general criticism of service, but public tolerant.
E	Very unfavorable	00-40	Public critical and antagonistic with possible agitation for service from some other source.

Rating Company Facilities

The plant and distribution system is carefully observed as a basis for the grade on construction and maintenance. When an inspector goes from company to company the comparison of the various equipments and the resulting service is less difficult than it would appear upon the first consideration of the factor. After observing the equipment of a company, an inspector makes a comparison with what has been found in previously graded situations and assigns the grade according to the dependability of the service as rendered and the durability of such service.

The service of a utility depends upon the capacity of the plant, distribution system, holders, and when necessary, high pressure transmission systems. For that reason a grade was assigned to this factor of service and deductions made according to the deficiency found as follows:

Plant capacity which includes condition of boilers, gas machines, benches, exhausters, relief holders and boosters and oil supplying apparatus—deductions up to 40 per cent; distribution system, including district governors and street mains—up to 10 per cent; purifying apparatus, including tar extractors, scrubbers, purifying boxes, etc., used in eliminating the undesirable constituents found in raw gas—up to 5 per cent; when compressors and a high pressure transmission line are required and found inadequate, further deduction may be made, up to 25 per cent.

A utility may have sufficient capacity on the items mentioned, but have insufficient holder capacity. For that reason, provision has been made for a deduction if the storage capacity is insufficient. It was considered essential that a coal gas plant have storage capacity equal to the average daily sendout and a water gas plant a storage capacity equal to 75 per cent of the average daily sendout. Using this as a basis, the per cent of holder capacity is calculated and if found below that required, a deduction of 0.2 per cent is made for each per cent below.

Reserve Equipment Judged

A company may be so equipped that ample operating capacity is provided, but reserve equipment is not supplied for use in case of unexpected breakdowns or when maintenance makes it necessary to shut down some part of the equipment. In order to insure continuous service, reserve equipment should be provided, and when it is found that a company has not provided the necessary reserve equipment deductions according to the possible interruptions to service may be made as follows:

Reserve gas machines, benches and boilers up to 60 per cent;

Reserve blowers, exhausters, pumps and other auxiliary apparatus up to 30 per cent.

Reserve supply of fuel oil and purifying material up to 10 per cent.

This gives a grade which covers the factor of provision for emergency as provided in the plant, but does not cover the additional chance of interruption to service brought about when gas is supplied by means of high pressure pipe lines and compressors. In situations where the plant is located at a point distant from the center of distribution, the grade assigned for the plant alone is multiplied by a factor as indicated in the following table:

Distance of distribution system from serving plant.	Factor
1,000 feet to 2 miles	.98
2 miles to 5 miles	.95
5 miles to 10 miles	.90
10 miles to 20 miles	.85
20 miles to 30 miles	.80
30 miles to 50 miles	.75

The method just outlined does not give consideration to a system where a community is supplied

from two sources. For this condition the following formula is provided:

Assume that town C receives gas from the two sources A and B.

Gc=grade which would be assigned when supplied from A and B.

Ga=grade which would be assigned if supplied from A alone.

Gb=grade which would be assigned if supplied from B alone.

$$\text{Then } Gc = (Ga + Gb) - \frac{Ga \times Gb}{100}$$

Miscellaneous Requirements

Utilities in Illinois are required to adjust the bills rendered whenever the test of a meter which has been in service shows the average error to be greater than 2 per cent fast. The error found is considered to have existed for the six months preceding the test or the length of time in service if less than six months. The method of refunding and the accuracy of the calculations are considered as well as the comparisons with the requirements by the utility. The grade assigned for this factor is based upon a comparison with the grade assigned on similar situations.

The grade for billing is based upon the method of delivering bills, the accuracy of the data presented and whether full information is shown so that the method of computing the bill may be determined by the consumer. The grade assigned is arrived at by a comparison with the grades assigned for similar conditions.

Utilities operating in Illinois are required to furnish free extension of mains to the amount of 100 feet per consumer served in a low pressure system and twice that amount in a high pressure system. The compliance of a utility with these requirements and a promptness of making these extensions constitute the basis for the grade on this factor. The grade for furnishing of new service is based upon the promptness of a utility in supplying service to a new consumer where a main extension is not necessary.

Rating Stimulates Companies

After the grade for each factor has been assigned a final weighted grade is computed and a report is sent to the utility showing the grades assigned and the irregularities and violations of the requirements which were found as a result of the inspection.

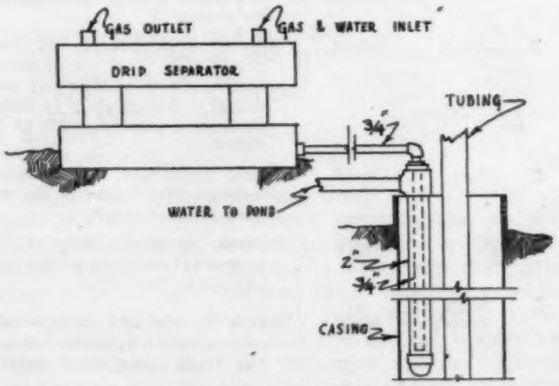
From careful consideration of preceding grades assigned and the interest shown by utilities graded, it appears that the grading system has stimulated the improvement of service rendered throughout the State. A list is published periodically showing the final grade for each city or town served and the company rendering the service. The apparent improvement appears to be partly because the companies wish to stand as high as possible in this list. Some of the larger companies have found it to their advantage to grade their own communities periodically so that they may keep a better check on the service being rendered and improve the conditions which become more apparent as a result of an inspection similar to the one outlined.

AUTOMATIC REMOVAL OF WATER FROM DRIPS

At some time in the life of most gas wells there is a quantity of fluid, produced with the gas, that varies in volume from a few quarts to several hundred barrels a day. The best practice for caring for this fluid is to pass it along with the gas into a separator where the water falls out and the gas goes to the line. It is then necessary, when handling this fluid in quantities that would fill the drip in a short while, to provide an automatic device for removing the fluid without waste of gas. A very simple method that can be used at every well is shown in the sketch.

In this example a two-inch line plugged at the bottom is run between the tubing and the casing. Inside of this two-inch line a three-quarter inch line is placed with the bottom end open. The length of the pipe is governed by the maximum working pressure on the drip, 2.3 feet of pipe being necessary for each pound of pressure when the fluid handled is water.

The drip is connected to the three-quarter inch line and any fluid in the drip runs through this line, filling the two-inch line until it overflows. The water in the two-inch line acts as a seal for the gas and unless the pressure gets agove the figure used



in calculations, the fluid will all be removed from the drip and overflow from the two-inch line without waste of gas.

In cases where the fluid stands on top of the packer and between the walls of the well and the tubing, as in the case of an open water sand, then only one line into the well is necessary. It must be submerged so that the head of fluid above the bottom of the pipe is greater than the pressure on the drip. In cases of this kind the water goes into the water sand and does not need to be handled at the surface.—H. F. Beardmore.

Natural Gas Pipe Lines Should Be Buried

THE importance of ditching and burying natural gas pipe-lines when possible is demonstrated as the result of tests conducted by the United States Bureau of Mines, Department of Commerce. The economical depth for placing such pipe lines is that at which the temperature fluctuations are reduced without excessive cost. A careful study of the cost of ditching and burying pipe lines should be made in each case to determine the economical depth of cover.

Although, in general, pipe lines through which natural gas is flowing should be buried to offset the effect of temperature fluctuations, the results of the Bureau of Mines tests indicate that deeper ditching than is at present considered good practice for transmission lines is not warranted. The excessive costs of ditching and burying lines under such conditions probably would be greater than the advantages gained by reducing the temperature fluctuations at the greater depths. The rapid daily fluctuations are eliminated for all practical purposes within one foot of the ground surface, and the total annual variation is reduced by over half at a depth of two feet.

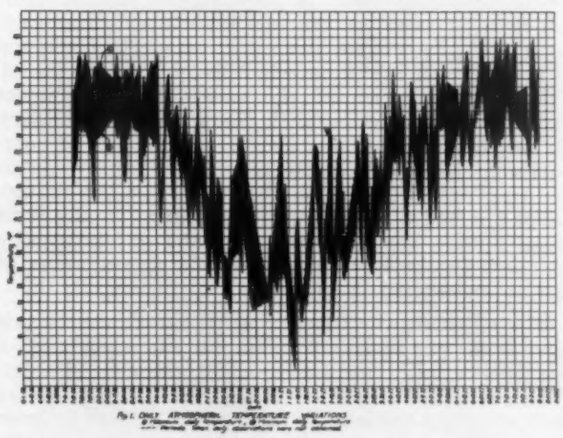


Fig. 1. Maximum and minimum daily temperatures of the atmosphere. There was a daily variation ranging from 2 to 42 deg. F. By calculation, the average daily variation was shown to be approximately 20 degrees. The maximum atmospheric temperature recorded during the tests was 100 deg. F., and the minimum 0 deg. F. The chart also shows the atmospheric temperature fluctuations were very rapid

Previous work performed by the Bureau demonstrated that pipe lines for the transmission of natural gas should be buried to minimize temperature fluctuations because when excessive the latter decrease accuracy in measuring gas volume and increase leakage of gas due to expansion and contraction in the pipe joints. These effects are governed by the rapidity of the temperature fluctuations and by the total variation over a period of time. The temperature of gas flowing through a pipe line depends to a large extent upon the temperature of the ground adjacent to the pipe; hence, fluctuation of the ground temperatures at various depths determines the economic depth at which pipe lines should be buried.

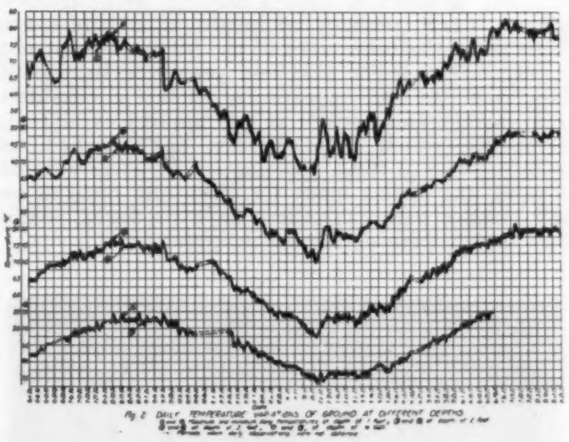


Fig. 2. Maximum and minimum daily temperatures at depths 1, 2, 3 and 4 feet respectively. (Graph at top shows maximum and minimum for 1 foot depth; thence to bottom graph which shows maximum and minimum for 4 feet depth). These graphs show that temperature fluctuations are greatly reduced beneath the ground surface. Even at 1 foot depth there were no excessively rapid fluctuations, as noted under atmospheric temperatures. The graphs also show that the average temperature of the ground beneath the surface for the entire test approximated the 60 degrees value used as a basis for defining the standard cubic foot of gas. As the depth is increased the minimum temperature to which a buried pipe line would be subjected is increased

Serial 2857, recently published, contains a record of the daily atmospheric temperature fluctuations at Bartlesville, Oklahoma, for twelve months and a similar concurrent record of the temperature variation one, two, three and four feet below the surface of the ground. It is hoped that the records will serve as a basis for estimating the depth at which a pipe line should be buried and for explaining measurement and operating difficulties in pipeline operation that are affected by temperature fluctuations.

This investigation was conducted with the cooperation of the State of Oklahoma.

Abstracted from Serial 2857, "A Comparison of Ground Temperatures at Different Depths and Temperature Fluctuations of the Atmosphere," by E. L. Rawlins and T. W. Johnson, United States Bureau of Mines, Department of Commerce.

Cautions Regarding Gas Appliance Attachments

By J. H. Eiseman

Associate Gas Engineer, Bureau of Standards

THE other articles in this Model Home Edition tell the reader how to build or what to buy in order to have a modern, well equipped home. It will perhaps be helpful if a little space is given to the other side of the picture—what not to buy. During the past few years the Bureau of Standards has had opportunity to test a considerable number and variety of gas appliances and attachments, which could hardly be classified as model. Some of these appliances have merely failed to fulfill the claims made for them and have in no way created hazards; others have produced conditions which were extremely dangerous.

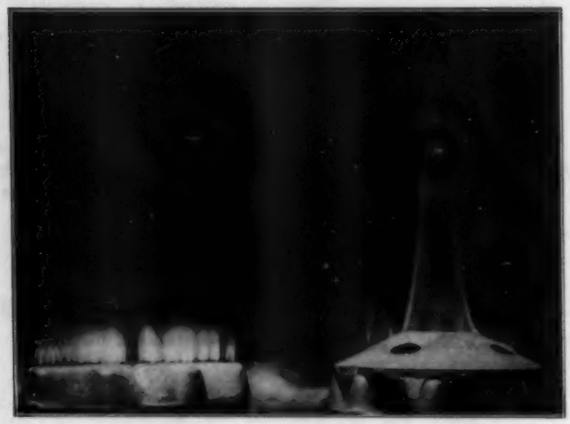


Fig. 1—Effect of "Gas Saver" on flame

Since the establishment of the testing laboratory of the American Gas Association at Cleveland, Ohio, there have been marked improvements in gas appliances, such as ranges, space heaters, and water heaters. Purchasers of such major appliances are likely to seek the advice of gas companies or reliable dealers and should be encouraged to do so. The information now available regarding this class of appliances is ample for the guidance of purchasers. Unfortunately, there is a variety of attachments and accessories, many of which are sold at the door by agents, regarding the purchase of which the customer is not likely to seek competent advice, and regarding the merits of which but little accurate information is readily obtainable.

It may be stated as a general principle that the greatest care should always be exercised in using or recommending the use of any attachment for a gas appliance, especially if it has not been manufactured by the maker of the original appliance for that particular purpose. The possible employment of such attachments may not have been considered when the appliance was designed, and their use may create a hazard where none existed before.

Brief descriptions of several attachments which are sold indiscriminately follow:

"Gas Savers" for Use on Range Burners

Many devices advertised as savers of gas have been patented and are being sold to the public. These devices do not, in general, correct any fault which may exist in the consumer's appliance, except that of a burner placed too far below the top of the stove, a condition which is now rarely found. They occupy much of the space between burner and utensil, interfering with the access of secondary air to the flame and the escape of products of combustion. The use of these devices invariably causes a lifting or elongation of the flames, and, although a small increase in efficiency sometimes results with small flames, the combustion of the gas is usually rendered incomplete, and a considerable amount of carbon monoxide is produced.

The effect on the flame of a typical device of this kind is shown in Fig. 1. On the left is pictured a top burner with the flames all of the same height. When a utensil is placed the proper distance above such a burner the heat is distributed uniformly over the bottom of the utensil. Such a condition results in a good heat interchange, causes no hot spots in any one location, and allows the gas to burn completely. Placing a gas saver above such a burner produces the effect shown on the right. A utensil placed over this burner is enveloped in flame, the individual cones are no longer distinct as in the preceding case, and it is impossible for the air necessary for completing the combustion to reach all portions of the flame. The result is the formation of considerable quantities of carbon monoxide.

One of the chief claims made for these devices is the saving of gas which is made possible by their use. The prospective buyer is told that by placing a "gas saver" on the burner the gas bill will be reduced 30 per cent or more. A series of tests was made, therefore, on different samples of "gas-saving" devices to determine the effect on the cooking efficiency, as well as the amount of carbon nonoxide produced. The burner used was a standard front burner of the star type. It was 1⅜ inches

Publication approved by the Director of the Bureau of Standards, U. S. Department of Commerce, Washington, D. C.

below the top of the grid, the average distance on modern ranges. The burner was adjusted for a normal gas rate of 9,000 B.t.u. per hour, with the air shutter set to give a medium hard flame. (Primary air about 50 per cent of that required for complete combustion.) Efficiency tests were made and the products of combustion analyzed, first with the burner alone, and then with each of the gas saving devices that are shown in Fig. 2 placed upon it.

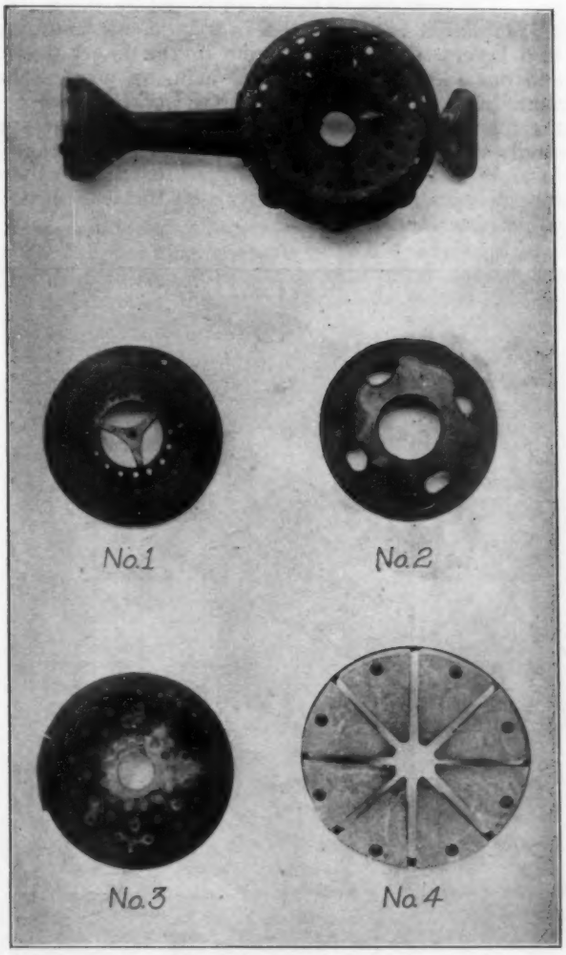


Fig. 2—"Gas-saving" devices tested and burner with one in place

Nos. 1 and 2 are made of cast iron, No. 3 of pressed steel, and No. 4 of soapstone on a steel frame. A top view of the burner with a "gas saver" in place is also shown in Fig. 2. The tests were repeated with two other gas rates, one below and the other above the normal. The results of this series of tests are given in Table 1. This table shows that carbon monoxide is formed by all of the savers at each of the rates used, and also that there is no justification for the exaggerated claims of economy made for any of the "gas savers" tested.

Attachable Solid Tops

Another attachment which has had a wide sale is the attachable solid top. This is another device handled solely by house-to-house agents. It is designed to replace the grids of the open top range.

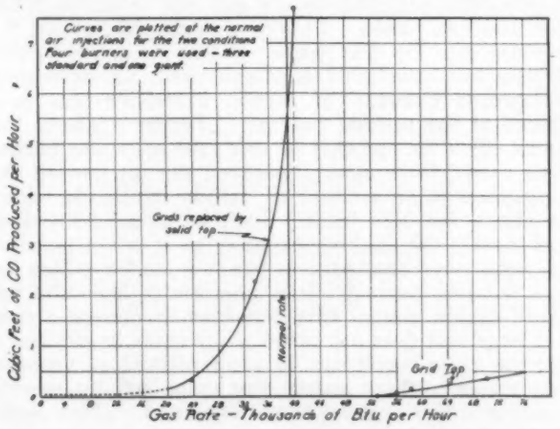

Curves are plotted of the normal air injections for the two conditions. Four burners were used – three standard and one giant.
Grids replaced by solid top
Normal rate
Grid Top
Cubic Feet of CO Produced per Hour
Gas Rate – Thousands of Btu per Hour

Fig. 3—Effect on production of CO caused by replacing grids of a well-designed range with attachable solid top. Four burners used

A few of the claims made for the use of such an attachment are given below. It is claimed (1) that it reduces the gas bill; (2) that it is safe and produces no carbon monoxide; (3) that it doubles the cooking capacity; (4) that it is easily cleaned; (5) that it keeps the food from burning; (6) that it applies an intense heat; (7) that the flames are protected from a draft of air; (8) that cooking utensils are protected and prevented from tipping; (9) that from two to four articles can be cooked with one burner; and (10) that burners are kept clean

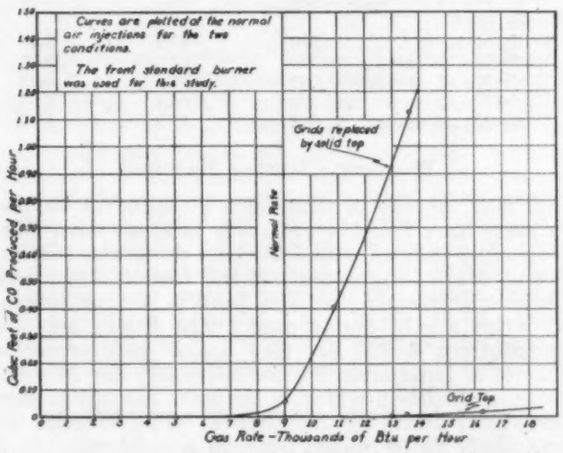

Curves are plotted of the normal air injections for the two conditions.
The front standard burner was used for this study.
Grids replaced by solid top
Normal Rate
Grid Top
Cubic Feet of CO Produced per Hour
Gas Rate – Thousands of Btu per Hour

Fig. 4—Effect on production of CO caused by replacing grids of a well-designed range with attachable solid top. One burner used

and prevented from clogging. Considering these claims in the order named, comprehensive tests made by the Bureau of Standards have failed to show anything which would indicate that a reduction in gas bills can result from the use of an attachable solid top. That the attachments are not

safe is shown by Figs. 3 and 4. Figure 3 shows the effect on the combustion of the gas when the grids of a well designed open-top range were replaced by an attachable solid top and when all four burners were in use. When using the grids no incomplete combustion occurred until a gas rate of 52,860 B.t.u. per hour was used. This is considerably above the normal rate for this range (39,000 B.t.u. per hour). When the attachable top was used, an extremely dangerous quantity of carbon monoxide was produced at the normal gas rate. Figure 4 shows the same effect except that in this case only one burner was used. Here again, however, the top caused the formation of an amount of carbon monoxide which is above the safe limit. Such an attachment does not double the cooking capacity as it is not possible to cook over any part of the top under which no gas is being burned. It is possible to keep the finished dishes warm; this, however, is merely a convenience and does not mean an increase in efficiency, for the same result can be accomplished on an open top range without using any more gas by merely turning it low beneath those utensils in which cooking is finished.

TABLE NO. 1

Tests of Gas Saving Devices Used on a Standard Star Burner
48 Ports—No. 40 Drill—Utensil 1¾ in. from Burner

	Gas rate B.t.u. hr.	Efficiency per cent	Carbon monoxide cu. ft. per hr.
Burner used			
Without saver	6,000	35.3	0.0
With No. 1 saver...	6,000	37.4	0.8
With No. 2 saver...	6,000	41.7	0.56
With No. 3 saver...	6,000	35.3	1.05
With No. 4 saver...	6,000	35.2	0.57
Burner used			
Without saver	9,000	36.3	0.0
With No. 1 saver...	9,000	37.5	0.93
With No. 2 saver...	9,000	38.8	0.99
With No. 3 saver...	9,000	36.2	1.07
With No. 4 saver...	9,000	35.7	1.66
Burner used			
Without saver	11,000	37.7	0.0
With No. 1 saver...	11,000	36.3	0.79
With No. 2 saver...	11,000	37.3	0.89
With No. 3 saver...	11,000	36.4	0.93
With No. 4 saver...	11,000	36.3	1.99

Frequent Cleaning Required

It may be easy to clean such a top, but a number of users have found it necessary to clean them more frequently than they had to clean the grids. Claims 5 and 6 are inconsistent; if the food is kept from burning it means that the heat is not as intense as when a grid top is used. The flames are protected from drafts, but they are so well protected that it is impossible for the necessary air to reach them, a condition which is far more dangerous than occasional drafts in the kitchen. The utensils are less likely to be tipped over on a solid top. It is impossible to cook several dishes when only one burner is being used, unless the rate at which gas is supplied to the single burner is greater than the combined rates necessary to cook each dish over individual burners. The use of an attachable solid top does protect the burners from being clogged. The disadvantages of an attachable solid top, however, far outweigh its few advantages, it creates a hazard, and is not economical. Attempts to eliminate the production of carbon monoxide from one of these attachable tops by cutting away portions to provide for ventilation did not result in obtaining complete combustion until most of those features regarded as desirable had been largely sacrificed.

Grease Absorbers

Another accessory which should be mentioned is the device which is attached to the flue collar of a gas range to remove grease and keep the kitchen walls clean. These attachments have different names, such as "Grease Absorbers," "Filter Flues," etc. The first flue of this kind tested by the Bureau of Standards is illustrated in Fig. 5. It contained two layers of steel wool, one in the lower section and one in the upper. The conclusion was reached that only a very small percentage of the grease in the flue products actually was absorbed by the steel wool; the remainder passed into the kitchen as before, but was more generally diffused and therefore did not form a dark streak on the wall directly above the flue opening.

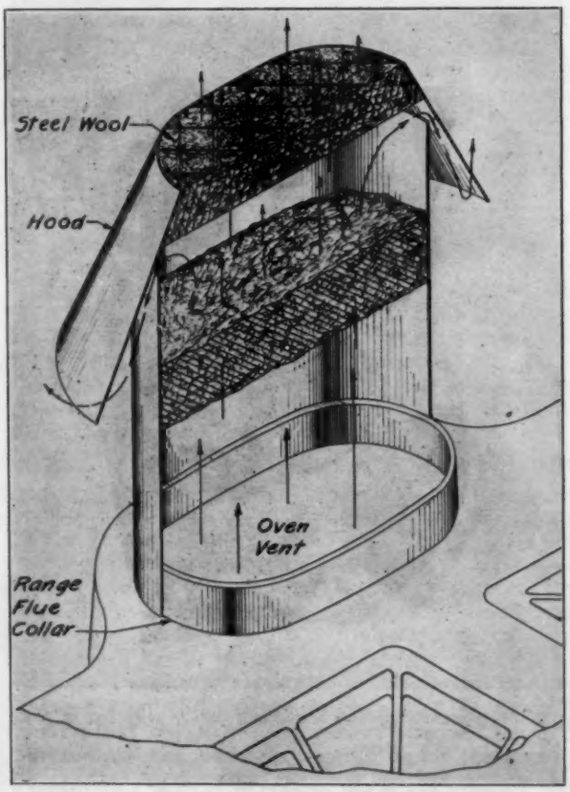


Fig. 5—A "Grease Filter"

Analyses of the flue products were made both with and without the flue in place in order to determine the effect of such a device on the combustion of gas in the oven. This test showed at once that incomplete combustion would result from the use of the flue on an oven in which the secondary air is barely adequate to effect complete combustion and that such use would greatly increase the hazard from an oven in which secondary air is in-

adequate. Because of this the manufacturer was advised to remove the lower section of wool. Then, if the top layer became completely clogged, the products would still be able to escape from under the down-draft hood. This change eliminated the hazard, but, of course, even less grease was absorbed than before.

A number of similar devices are being sold without any steel wool or grease absorbing medium in them, in these there is no danger from incomplete combustion as long as the total flue area is not reduced. Here again, however, they merely deflect the grease away from the wall, or diffuse it more generally around the kitchen, and do not remove it.

"Burner Protectors"

Devices which are sold under the name of "burner protectors" vary from simple flat metal discs to well formed discs of metal slightly larger in diameter than the average utensil. They are placed directly on the grids of a gas range; their purpose is to catch any material which spills or boils over from the cooking utensils which are placed upon them. One tested at the Bureau of Standards had a small hole in the center, and four raised supports

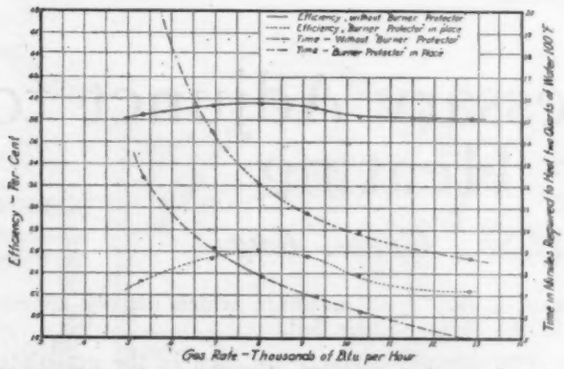


Fig. 6—Comparison of heating efficency and time to heat two quarts of water through 100° F. with and without burner protector

on which to rest the utensil. The use of this accessory did not affect the combustion of the gas; it is held far enough away from the burner to allow the flames to be completely aerated, and there is ample room for the escape of the products of combustion. Its use does reduce the cooking efficiency, however, and this effect is shown in Fig. 6. When gas was burned at the normal rate of 9,000 B.t.u. per hour, the use of the burner protector reduced the efficiency from 39.3 per cent to 25.7 per cent, while the time required to do the same amount of heating was 7.2 minutes without the protector and 10.8 minutes with it in place. This is an example of a device that fulfills the claims made for it, but at the expense of two other equally desired results, low gas consumption and speed of cooking.

Water-Backs

The average gas range burner has an efficiency of about 35 per cent, which means that only 35 per cent of the heat liberated by the gas is transferred to a utensil in which the cooking process takes place. This has led to the development of a number of devices for utilizing the waste heat, among the most common of which are the so-called water-backs, which are placed around or over a burner. They are connected to a storage tank, and when the gas is being used the water in the water-back is heated and starts a circulation between it and the storage tank, similar to that in any side-arm storage water heater.

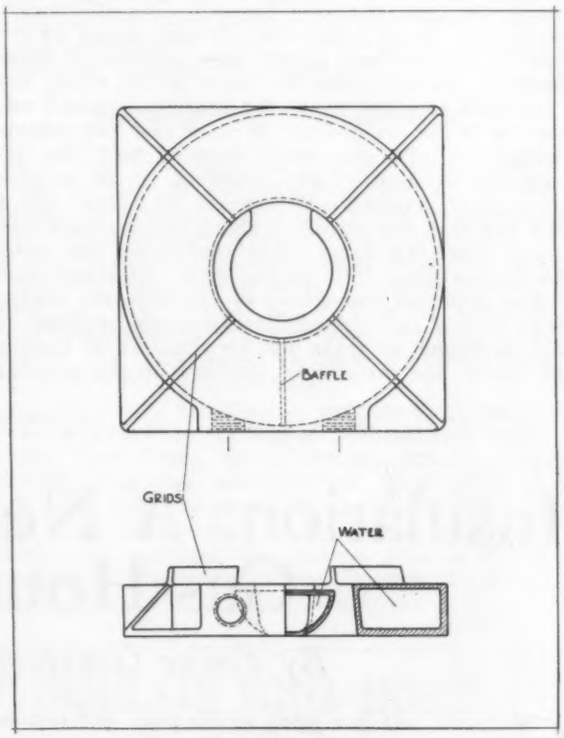


Fig. 7—Water-back

One of the devices of this kind tested is shown in Fig. 7. The attachment is designed to replace the grid of an open-top range, and does not limit the circulation of gases about the flame more than does a large utensil placed on the cooking top. Although enough combustion space and exit for the products of combustion are allowed by this attachment, so that its use does not create a hazard, a number of similar devices do cause the formation of carbon monoxide because they are placed directly in the flames, or so closely surround the burner that secondary air is excluded. If a device of this kind is to be used at all, care should therefore be exercised to see that the combustion of the gas is not affected.

The "Hot Water for Nothing" Fallacy

The purchaser is led to believe that such a device provides hot water for nothing, that is, without affecting the cooking efficiency. The meal is supposed to be prepared and hot water stored with the same amount of gas as was formerly used only for cooking. The water-back shown in Fig. 7 was studied to determine its effect upon efficiency. It was installed over a standard top burner on a well designed range and connected to a 20-gallon storage tank. With the gas adjusted for a rate of 9,000 B.t.u. per

hour (normal gas rate) a utensil containing two quarts of water was placed upon the water-back and the amount of gas required to raise the temperature of the water to boiling was recorded, together with the time required. From the amount of heat delivered, the weight of water heated, and the increase in its temperature, the efficiency was calculated and found to be 19.9 per cent. The water-back was then removed and a similar test made using the grid over the burner. The efficiency in this case was 37.8 per cent. It can readily be seen that this water-back placed upon an average burner reduced the efficiency for cooking by about half. The time required to do the heating was 14.7 minutes with the water-back in place and 7.69 minutes without it. Its use nearly doubled both the time and the amount of gas required to do a given amount of cooking. This result is mainly due to the fact that the utensil is about two inches farther away from the flame when resting on the water-back than when it is on the grid. Although some water is heated and stored in the tank, the amount thus heated and the final temperature attained are not sufficient to make up for the loss in cooking efficiency, and the overall efficiency of the combination is much less than that of any appliance built as a water heater only. Such a device, therefore, does not give something for nothing.

It is perhaps worth mentioning in this connection that a variety of appliances are built to perform several functions, usually "with the same heat." There is, for example, a range in which the gases from the burners used to heat the cooking top are next employed to heat an oven and finally to heat a water reservoir. In an appliance of this kind the total thermal efficiency of the combination under the most favorable conditions of use may be greater than that obtained with appliances in which individual burners are used for each purpose. But it rarely happens that the user will want to employ all the facilities of the stove at the same time in the fixed ratio which will give the highest efficiency. It is more likely that the cooking top will be used in preparing breakfast, the oven in the middle of the forenoon and the water heater at bedtime, with little overlapping for the various services. Under such conditions the combination appliances are very inefficient, and they are sometimes as expensive as the three or four individual appliances they are designed to replace.

Insulation: A Necessary Adjunct to Gas House Heating

By Ismar Ginsberg, B.Sc., Chem. Eng.

CHEAP fuel is a thing of the past, and this refers to anthracite coal as well as the more expensive fuels. Consequently heat insulation is becoming a very important factor in the economy of house heating. Insulation is being increasingly recommended and practical tests have proven that the expense involved in insulating either an old house or one in the process of construction is quickly repaid by the reduction in the fuel bill, provided, of course, the same temperature is maintained in the house after insulation as before.

Hence the gas man, who sells a fuel that must be used with the highest possible efficiency in order to realize its maximum benefits, should be interested in insulation. For insulation of the house will have a marked effect in improving the over-all efficiency of the gas heating process, thereby reducing the cost of heating.

Insulation Materials

There are in general three groups of materials which can be used for insulating purposes:

1. Cork and its derivatives.

2. Fibrous vegetable materials, such as pulp, in compressed form.

3. Cellular or fibrous mineral products, such as asbestos.

In addition there should be mentioned cattle hair, a very good insulator, which usually appears in the form of hair felt.

The mineral products are used in the granulated form (magnesia and gypsum) as well as in the cellular or fibrous state. It is also possible to have insulation made of materials included in more than one of the above mentioned classes.

In every case the value of the insulating material depends on its cellular structure; it must have a great number of minute air cells disseminated throughout its mass. Furthermore, the insulators to claim economic value must have a low thermal conductivity, that is, they must permit but a minimum of heat to pass through their thickness in a given space of time. In addition, they must not absorb moisture to any great degree and they must lend themselves to easy and economical installation. These insulators should also be fireproof, and they must not decay and must resist the attacks of vermin and rodents.

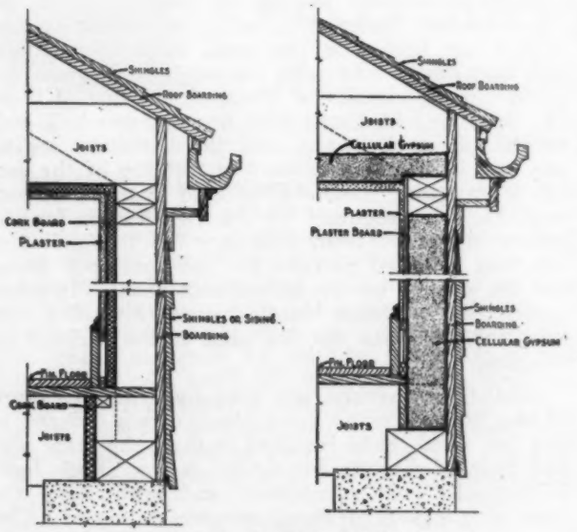
The importance of the ease of applying the insulation and its low thermal conductivity are readily apparent, but that of its low absorption powers may not be. If the insulator is capable of taking up water in large quantities, it is not to be classed as a good insulator, for the reason that as soon as it absorbs water, its insulating value is materially destroyed. Water is a good heat conductor. Fur-

thermore, its presence in the insulation enhances the formation of moulds and the insulation is thereby gradually destroyed.

There are other important properties that good insulation should possess, in certain cases at least. Thus it should have a good surface which is easy to plaster over without the use of lath. It should not buckle or swell after being erected; hence it should not expand or contract appreciably on changes in temperature. All of these are important properties of the type of insulator in compressed form that is used in the actual construction of the house.

Manner of Application

It will be interesting to review briefly the manner in which these insulators are used. Figure 1 shows the method of using granulated insulators which are poured in between the hollow spaces in the walls of the house. The gypsum or other granulated product is first mixed with water and then poured into the space between the studs. This form of insulation can only be applied while the house is being built.



Figs. 1 and 2—Application of insulation

Figure 2 shows a method of using cork board. This is placed just behind the plaster covering. It is also placed right above the plaster ceiling. These are the approved locations for the insulation, as has been proven by tests. Of course, other insulating products, such as compressed pulp boards, cane fiber board and the like may be employed in similar fashion. Here again the insulation cannot be applied after the house has been built, but only during its construction. This applies, at least, to the walls of the house, for it is possible to line the ceiling of the rooms under the attic with the insulating material, particularly when the floor of the attic is in the unfinished condition, as is usual in most houses; that is, the insulating board is nailed right on to the exposed rafters.

It is not correct practice to line the inside of the walls of the attic and leave the floor unlined. The place for the insulation is either on the floor or on both the floor and the inside wall. Felt may be used in the same manner as compressed boards.

It is not feasible to insulate the finished house except the ceilings of the rooms under the attic, unless the walls are torn down. Nevertheless, the simple application of insulation to the ceilings, shutting off the effect of the cold attic, lessens the heat transmission to such a degree that the fuel consumption is materially reduced.

What Insulation Accomplishes

It has been estimated that from twenty to thirty per cent of the heat supplied to a building is lost through conduction through the windows and the doors. Approximately fifteen to thirty per cent is consumed in heating up the air that infiltrates into the building through the walls and roofs, around window and door frames and due to the opening and closing of doors. The balance, between fifty and sixty per cent, is carried away by conduction through the walls and the roof.

By using storm windows or weather stripping, it is possible to reduce the loss of heat through leaky windows and doors to a certain extent. The well-built house will naturally not allow so much air to filter into the rooms as the house which is poorly built with poorly set windows and door frames. But, after all, the greatest portion of the heat is lost through conduction through the walls and ceilings or rather roofs of the house.

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AND

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INDUSTRIAL DEPARTMENT

Rochester Gas and Electric Corp.

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Fig. 3—How the gas company can help

The various types of insulation used have different rates of heat conduction. Thus in the case of pure corkboard it is 0.30 B.t.u. per square foot,

per inch thickness, per degree F difference between the inside and outside temperature, per hour. A hair composition, such as that made from cattle hair, is claimed to have a conductivity coefficient of 0.271.

When the heat insulator is applied to the wall construction, which has, of course, a heat conductivity coefficient of its own, the resulting heat conductivity coefficient will be materially reduced, it being a combination of the two coefficients. Thus a four-inch wall of brick and a four-inch wall of hollow tile with plaster on the inside shows a transmission of 0.288 B.t.u. per square foot, per degree F difference, per hour, and when a thickness of one and one-half inches of corkboard is added the heat transmission coefficient is cut down to 0.115 B.t.u. The difference between the two coefficients is therefore 0.173, which is more than fifty per cent of the original coefficient. It is therefore apparent that it is highly possible to attain from thirty to thirty-five per cent heat saving, depending on the size of heating plant and the manner in which it is operated.

There is one important point that must be made in this connection, and which the gas salesman who has recommended insulation in the gas heated house has perhaps been confronted with. When it is recommended that the house be insulated and that a saving will thereby be effected in the fuel bill, the house owner will be unconvinced even after the insulation is installed for he will insist that he is still spending the same amount of money for his fuel. However, the trouble will always be found in that he is heating his house to a higher temperature after insulating it than before, because he is finding it so easy to keep the house at more than a good temperature, perhaps more than sufficient to make it comfortable. Whenever a careful test is made, however, it will always be found that an actual saving in fuel is effected.

Uniform Heating

While the fuel saving is an item of importance it is not the only advantage that can be gained from the use of insulation in house heating. The house which is insulated is heated much more uniformly than the one which is not. It is consequently free from drafts and there is no danger of catching cold in such a home. It also follows that it is not necessary to install so large a heating plant as would be required were the house not insulated. This plant can be reduced in size by thirty to thirty-five per cent.

Furthermore, an insulated house is cooler in summer than an uninsulated one. It has been found that the midday and early evening summer temperatures in the rooms under insulation are ten to fifteen degrees F. lower than they would be were the insulation not in place.

While it is important to use an insulator which has real intrinsic insulating properties, it is also important to use the insulation in the proper thickness. If the proper thickness of insulation is not employed, the heat saving will not be what is claimed. Thus it is one thing to claim a saving of thirty to thirty-five per cent with a certain kind of insulation and quite another matter to obtain that with a reasonable thickness of material. It is possible to attain such savings with a poor insulation, provided it is used in great thickness. The better the insulation the less the thickness required and, inasmuch as the cost of the insulation will vary directly as its thickness, the thickness factor is obviously a highly important one. It must, however, be remembered that while both cost of insulation and fuel saving will vary with the thickness, this variation is not one of direct proportion, and furthermore for any fuel cost and any insulation cost there is a definite thickness which gives a maximum return on the money invested in insulation.

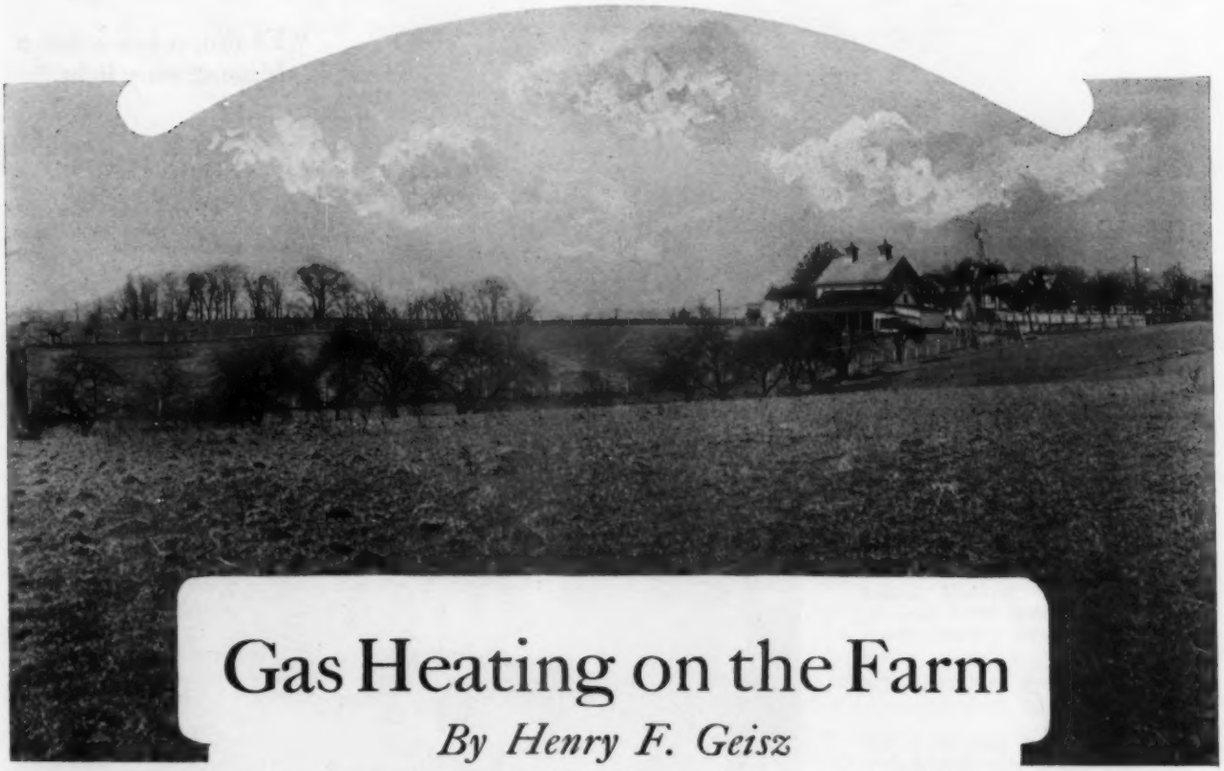
Then again it is understandable that the higher the price of the fuel used the greater should be the thickness of the insulation.

Corroborative Tests

Under these conditions there is no doubt that a considerable saving will be effected, varying between thirty to thirty-five per cent. Actual tests have proven the correctness of this contention. Records have been kept on a number of buildings over several heating seasons and without exception the aforementioned saving has been found to be conservative. Mention is made of two brick and hollow tile houses in the same block of identical size and design and with essentially the same exposure in the vicinity of Pittsburgh. One of these buildings was insulated with one and one-half inch corkboard on the walls, and the basement ceiling and two inches of corkboard on the top of the second floor ceiling joists. Expressed in terms of percent, the heat required by the two houses for the seventy-five days from February 5th to April 21st was one hundred percent for the insulated house and 163 percent for the uninsulated house. In other words, the insulated building used thirty-five percent less heat than did the same house without insulation.

Another comparison was also made in Pittsburgh of two houses in the same block which differed in size but which have installed in them the same size and type of Bryant hot water boiler. Both have Minneapolis heat regulators, and both have the same size gas fired Ruud hot water heater. The larger of the two houses is insulated with corkboard and as a result it used only 256,000 cubic feet of gas during the 1925 to 1926 heating season, while the smaller insulated house used 293,000 cubic feet in the same appliances. Based on the gas used per cubic foot of heated space, the insulated house used 35.4 percent less gas than the insulated. Stated in another manner, the heating of the uninsulated house cost 54.8 percent more per cubic foot of heated space than the heating of the insulated house.

The lesson to be derived from any review of the house insulation situation as far as the standpoint of the gas industry is concerned, is that the gas man should always recommend insulation. He should recommend insulation of the entire house as it is being built and, if the house is already built, he should insist on insulation being applied wherever possible.



Gas Heating on the Farm

By Henry F. Geisz

Consolidated Gas, Electric Light & Power Company of Baltimore

IN THE northeastern outskirts of Baltimore there is a road that winds and twists and turns and winds again. Starting at Belair Road, where the din and hustle of the populous city area holds supreme, it bends its way northward and eastward seeking ever to escape from places of noise and excitement to the quieter regions beyond. And it at length succeeds, for another turn and it leads to the top of a small hill where stands a farmhouse at the entrance to a prosperous thirty-two acre farm, which is perhaps unique in the annals of all farm history, it being probably the first farmhouse that is heated throughout by manufactured gas.

A Typical Farm

A small road leads from the main highway through a well-kept entrance, between numerous farm buildings, then branches and goes to various parts of the farm itself. To the right of the entrance stands the farmhouse proper, a two-story frame building of six rooms, surrounded on two sides by a large porch. To the left is a small low building used for cooking and to house the farm help. To the front are various other buildings, a shed for carts and farm implements, a stable for horses, a garage for the automobile. Farther out to the rear and sides of these buildings the farm itself unfolds into fields, mostly of level land, with the neat and thrifty appearance of a prosperous place.

Years and years ago the farm came into the hands of the forebears of the present farmer, Mr. John Reugert, and by them was passed to him. For seventy-four years he has worked it, the responsibility now being shared by his son.

Changing Living Conditions

In these years Mr. Reugert has gone through many stirring times and seen many changes and advances in farming and in living. Wars and strife, economic and politieal upheavals have surged and ebbed and left their mark. But none have been more appreciated than those that left the standard of living changed and improved.

Whenever we think of the farm and farmer we think of quiet and solitude and rustic simplicity—of sturdy, ruddy and robust men and women working hard and long throughout the day, gathering about the fireplace at night in the old simply furnished farmhouse. But all this is changed. The farmer folk may still be hardy and robust, they may still work long hours in planting and harvest time, but they need no longer and in fact do not gather about the fireplace as the only means of warmth and comfort.

The fireplace with its cheery burning logs that heated the front of the room and left the rear cold had long ago given place to the coal stove that heated single rooms, then perhaps to the furnace that not only sent heat but also those persistent emissaries of the coal bin, dirt and soot and fine ash particles, to all parts of the house, creating more and more work of cleaning and washing for every-

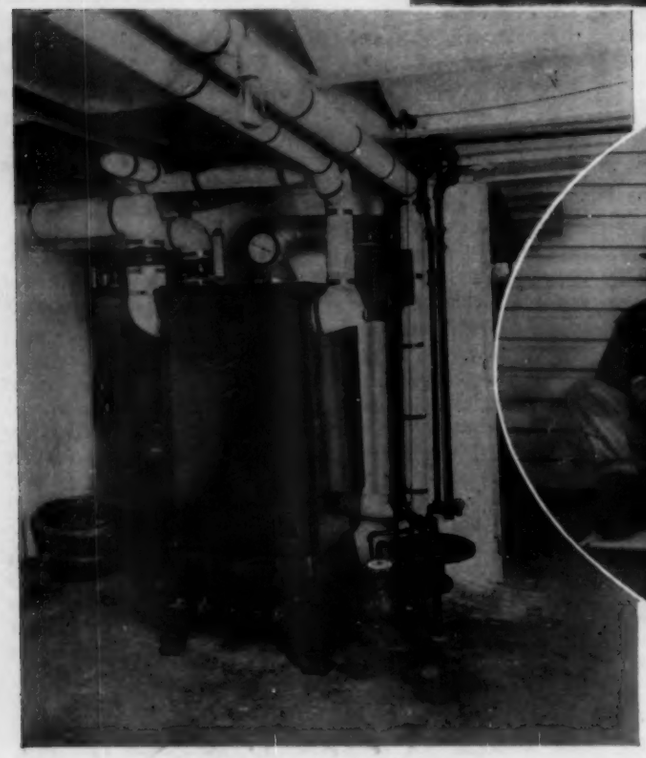
Above—The abandoned wood pile.

Below—The neat gas-fired furnace installation which turns the cellar into a spare room.

Oval—Country folk who are a step ahead of most city dwellers.

"Ye dinna ken whar a blessing may light."

Below—Farmer John Reugert's home which has been made clean, modern and comfortable by a gas-fired furnace.



one. But finally there was created the acme of heating comfort, the gas fired boiler. Absolutely positive uniform heat in all parts of the house, no work of shoveling coal, or of removing ashes or of tending in any way to the needs of the furnace. the dirt and soot of the coal, the particles of fine ash once and forever removed from the house, less work, more comfort—such are the blessings resulting from the creation of the gas-fired boiler.

The Farmer Is a Prospect

And by the farmers near the city this splendid convenience is obtainable and they need no longer envy the privilege the city folks have of using this most modern method of heating by gas. And so on the farm of John Reugert there came thoughts of added heating comfort, thoughts turned to desire, desire brought decision, and thus it came about that in the month of February, 1927, hot water radiation was installed throughout the sixty-year old farmhouse and a gas fired boiler was put in a small cellar to supply the heat for the system.

The installation called for two hundred and seventy-seven square feet of hot water radiation to be installed in six rooms. A Bryant gas fired boiler purchased through the Consolidated Gas, Electric Light & Power Company of Baltimore was located in a small cellar under the rear of the farmhouse and there connected to the heating system. The installation was made by the Wm. E. Wood Co. of Baltimore. This boiler is complete with a gas governor for regulating gas pressure, thermostatic pilots that automatically cut off the gas if the pilot should go out, altitude gauge and thermometer, relief valve and a snap valve for controlling the supply of gas to the boiler. The latter valve is connected by a chain to a No. 24 Minneapolis motor which starts or stops the boiler by electrical contact made by a No. 77 Minneapolis thermostat, located in the rooms above and which naturally operates on room temperature.

This system of heating homes gives an even temperature throughout the house at all times and of a degree determined by the occupants themselves. The only attention a gas fired boiler calls for is the winding of a clock on the thermostat once a week and looking after the water in the system. All ordering of coal, cutting of wood, building the fire, shoveling coal, regulating drafts, shaking down throughout the day, banking at night, removing ashes in the morning, rebuilding the fire and starting the full round again—all this is done away with; no fuss, no worry to the gas fired boiler.

Other Uses for Cellar

The cellar of the farmhouse where the gas fired boiler is installed need no longer serve for a coal bin. Instead it is used to store roots and seeds and at times to house the incubator for the hatching of poultry. And the farm hands can gather there in rainy weather, in a place clean and warm to mend harness or otherwise to spend their time.

For homes in the city or homes in the country where gas is available, the gas fired boiler is taking its rightful place of providing the best in heating comfort to all classes.

"THE DELICATESSEN WIFE"

STATEMENTS attributed to some mere males that the New Freedom has created the "delicatessen wife" and undermined the culinary art in the average home are refuted by figures revealing that more than 36,000 women last year attended regular cooking classes in Brooklyn and Queens under the auspices of the Home Service Division of the Brooklyn Union Gas Company.

In addition to the regular classes, instruction and demonstrations were provided for 39,000 women in social and political clubs. The work was also carried on in the public schools, before members of both day and evening classes. Numerous troops of girl and boy scouts attended special courses during the year. And added to these were the lessons given at the Academy of Music in cooperation with the Brooklyn Institute of Arts and Sciences.

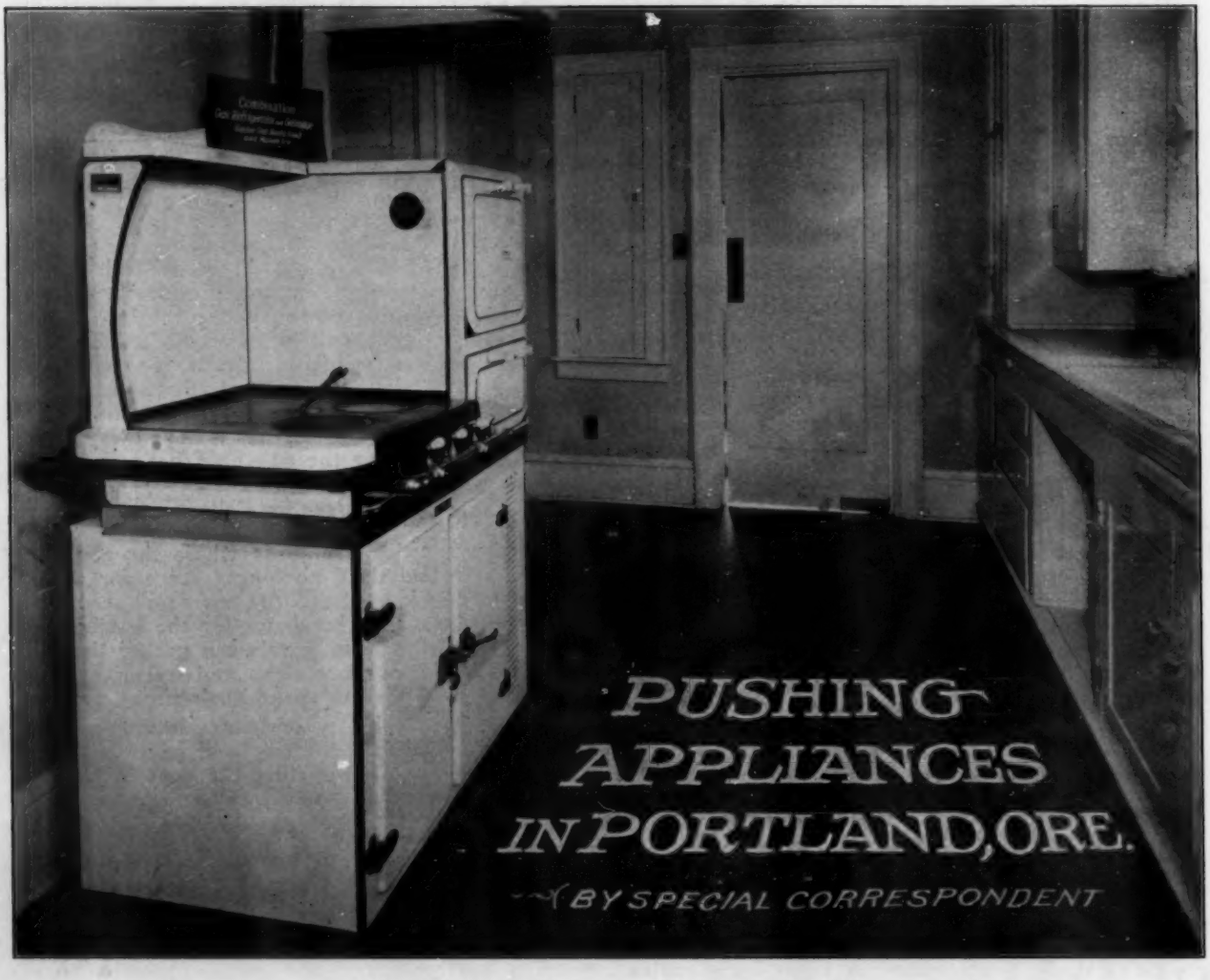
According to Miss Ruth Soule, who directs the work of the gas company's Home Service Division with the assistance of Miss Martha-Louise Grant and Miss Mildred Magonigle, more than 100,000 recipe sheets were distributed in the two boroughs with other literature dealing with the proper operation of gas appliances in the home.

Instruction was given in more than five hundred homes during the year. This work was carried on by Mrs. Margaret Conklin and Mrs. Anne Hammond as part of the Home Service Division's extensive program.

"The attendance of our classes," says Miss Soule, "shows a steadily increasing interest in domestic science during the past three years. There is little to support the idea that the modern wife is anxious to avoid the kitchen. The interest shown by thousands of new brides who have attended our demonstrations and lectures shows the folly of any such claims. There were thousands of new brides in our classes, many of them of the so-called flapper type. And they all showed the same desire to learn everything they could about the proper preparation of meals.

"Older women, including some grandmothers, regularly attended the instructions and were quick to learn how to get up the new recipes.

"The reason for this wide interest in cooking," says Miss Soule, "is largely due to the ease with which the new regulated oven can be operated." She also gives credit to the gas refrigerator and other conveniences of the modern kitchen."

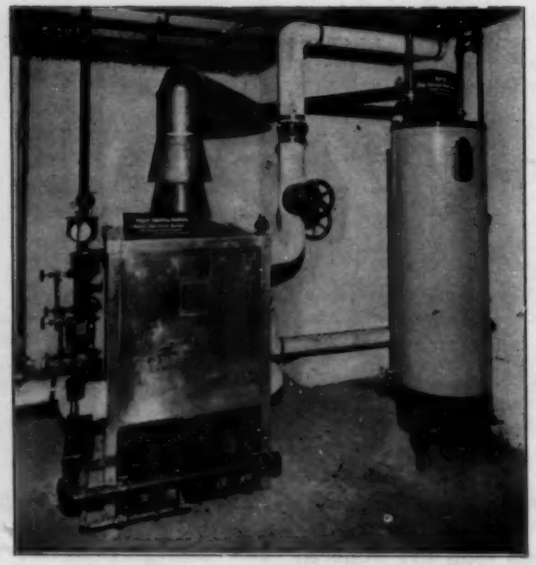


PUSHING APPLIANCES IN PORTLAND, ORE.

BY SPECIAL CORRESPONDENT

"ONE of the inevitable evils in the way of spending tog, sales manager of the Portland Gas and Coke Company, Portland, Ore., "is being under the necessity, and at the same time having the privilege, of furnishing model homes with gas appliances."

"Few immediate results have ever been traced by us," he continued, "to the installation of gas appliances in model homes for the inspection and education of the thousands who visit such places, but, nevertheless, one has to work hard and be willing to stand the gaff if he can only get his appliances in, instead of seeing the electric people monopolize the so-called Model Homes."



Ideal gas boiler and gas storage heater

The pictures secured from Portland and herewith reproduced are said by Mr. Hartog to represent two Model Homes thrown open in February, 1928, in a new addition; the one a house of the finer type and the other one of simpler pretensions.

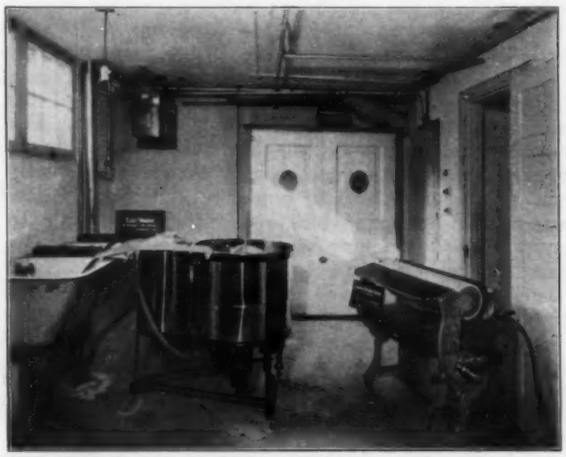
In the more expensive house was the Vapor Ideal Gas-Fired Boiler and Arco Gas Storage Waterheater, both installed by the American Radiator Company who secured the contract for the radiation. Both are shown in the picture, and in the kitchen was the Smoothtop as shown along-

Smoothtop range and Ice-o-lator

side of the Ice-O-Lator. It is interesting to note, as Mr. Hartog suggested, that each appliance is properly labeled, something which is often neglected, and even then, he said, in spite of the sign saying "GAS Refrigerator," many women pointed it out as a "Frigidaire," showing what advertising will do to establish a name in the public mind.

The other pictures are of the cheaper house in which the Gas Company placed a combination Gas Refrigerator surmounted by an insulated Tappan range, and the public is tremendously attracted to this, we are informed, especially when they find that the gas coming out of the same pipe is used to heat the food and to create the refrigeration.

As will be noted, the company installed a Snow-White Gas-Heated Clothes Dryer, a Gas-Heated Super-Simplex Ironer and a Gas-Heated Easy Washer with Dryer included, furnishing what would otherwise be simply a bare basement.



Easy washer, Simplex ironer and Snow White drier

Gas Water Heating

By H. J. Long

President, The Kompak Company

TO THOSE of us who for twenty years have worked, dreamt and talked water heating, it has seemed that the wheels of progress have turned very slowly indeed.

Standing at the threshold of 1928, however, and viewing the vista there opened to our gaze, no one can doubt that the "Gas Water Heater Age" has arrived. The past years have been preparing the way. The stage has been set—now the drama is on.

Who can doubt the tremendous possibilities of the self action storage gas water heater for the next few years. No matter where the gas executive may turn for increased gas revenue, under the most favorable prices and with the most favorable load, inevitably his eyes must turn to the self action water heater in the home.

Actual figures are not necessary. The gas range has become standard. Its greatest possibilities lie in new homes, and in new and improved stoves to replace old ones, and promote a greater use of cooking and to retain the volume of gas already in use. Unfortunately, the records of many gas companies show that cooking by itself rarely requires sufficient gas per month to make the customer a profitable one to the company. By means of the range, gas has been sold to the customer as a fuel for the home, but this alone does not pay.

Tank Water Heater Only a Stop-Gap

The tank water heater is only a stop-gap. It has served its purpose. It has shown the home owner how simple it is to heat water with gas, but it has not given him the service of which gas is capable, the perfect service which he really wants, and which gas only can give, nor has it made the user a profitable customer for the gas company.

Why do I herald 1928 as the stepping stone to tremendous water heater sales? Because the barriers which stood in the way have been or are rapidly being broken down. For years the public were forced to pay a high price for an imperfect service. That is something that the public refuses

to do in very large numbers. Imperfect service, for the wealthy class of people who purchased the automatic type heaters, with relatively high gas bills for the service rendered, caused the automatic gas water heater to be classed as an expensive luxury for the very rich, and he was the very one who had plenty of help to keep a coal fire going.

All this has been changed by the self action storage water heaters. Built for the average home to give perfect service at a reasonable cost, there are now at least 2,000,000 immediate prospects waiting to be sold.

Selling the Gas Man—Our Biggest Problem

The biggest problem of all has been to sell the gas man himself on the value of his own fuel. For years he has been telling his customers how to save gas, how not to use it, how expensive it really was. They were told to read the meter every few days and if their gas bill was going up a trifle to stop using so much. A gas bill complaint was a signal for an apology.

Curious as it may seem, gas house heating has helped more to sell gas water heating than anything that has happened in twenty years, simply because the gas man has discovered that gas is worth what it costs in service rendered.

There are thousands of families enjoying the perfect hot water service that only a self action storage water heater can give, at a cost of about 30c. per person per week. About the cost of a weekly bath in the old-fashioned barber shop. In the light of this cost, $5 a month for a family of four people, is certainly small cost for what they receive in comfort and convenience.

"Sell self action storage water heaters" should be blazoned atop the list on every sales manager's plans. His company wants the gas sales, his public need the service. Selling the water heater, therefore, is intelligently presenting its ability to serve them to the greatest possible number of people. There are two steps in a sale—first, a knowledge of what a self action water heater will do, with a desire to own or at least know more about it, and second, the closing of the sale.

Use of Publicity

The first can be done with publicity. Every form of publicity available. One large company in New Jersey has sign boards all over their territory. "Hot water at the turn of a tap." The nation is on wheels and they all see it, beautifully illuminated at night. Direct by mail—or personally delivered literature should go into each home several times a year—"as falling water wears away a stone." Newspaper advertising is expensive for large communities, particularly for educational purposes, but for the second step in the sale, a few well chosen closing ads can prove of incalculable help, for in the closing, man-power is the answer. The man must know "hot water," knowing onions is not enough. He must know the game, but above all, must be enthusiastic about it. One enthusiastic water heater man in a town will do as much business as a dozen lukewarm men.

Make the pay worth while so that a good man can make big money. Don't let someone else's salary be the limit that a salesman can make selling "self action water heaters." Get $10,000 a year men if you can. They will sell twelve months of the year.

Bring in the plumber. It is not necessary to make it a matter of brotherly love. Make it a business proposition. The self action water heater is a plumbing appliance. He can sell them if he will. Give him the ammunition. Tell him the sales points—make it worth his while—show him that it will pay him to work with you. Every heater sold is to some plumber's customer. If he fights you he loses, if he works with you he gets his share. The journeyman gets $1 or more an hour. It is expensive for the plumber to give service and make calls which the gas company will do for nothing if they work together. When he uses the gas company heaters it is all profit, when the job is done, and he has switched all responsibility to other shoulders. Make it worth while to the salesman to also work with the plumber, for his bread and butter depends on what he makes.

Sell Lasting Merchandise

Above all, sell high quality merchandise—of what avail are volume sales if the appliance does not continue to give service so that it is used at the maximum year after year. A satisfied customer means a satisfied gas user, and a water heater that continues to give perfect service year after year is the one which accomplishes this purpose.

The actual sales of self action water heaters today in this country should be an inspiration to the gas fraternity to double and triple their business. One manufacturer who five years ago made range boilers almost exclusively is alone doing more business yearly than the combined output of all manufacturers ten years ago. One hundred or more manufacturers are now marketing self action storage water heaters and the business is barely started. The combined selling activity of this large number of manufacturers is selling the idea of gas heated hot water. The gas company should lead in this field. All that they need is "self action" in the organization to put "Self Action Heaters in Every Home."

GAS PUTS ON ITS SEA LEGS

The palatial yacht, Fan Kwai, owned by Col. H. H. Rogers, wealthy oil man, is provided with all the physical comforts that modern sea travel affords and one unusual sea-going convenience that no luxury-loving landlubber would be without—gas service.

The yacht is equipped with a gas-making machine which generates the fuel for a gas range with two ovens and a broiler, and the latest type of water heater. Col. Rogers is not the first man to go to sea with a gas range on board a private yacht, but he is the first, so far as existing records show, to go to sea with a gas-fired water heater.

Then and Now

By George M. Kirchmer

Brooklyn Union Gas Company

THE picture or sketch always has a certain appeal which we do not find in the written word. A man or woman, in reading a newspaper, may skip columns of printed matter, but, as a rule, either will pause to look at a picture, regardless of the subject.

In the news columns a story always is more attractive if it is run with pictures of the principals or some sort of sketch. Editors have learned that even simple maps, printed in connection with an accident or historic event, are popular with the readers. And certainly it is logical to conclude that features which attract great attention in the news columns will serve the same purpose in the advertising columns.

Pretty Face Attracts Attention

You will notice that the bulk of display advertising today is of the illustrated variety. The cigarette companies were quick to learn that a pretty face in an ad did more to attract attention than even a catch phrase or a snappy slogan. And some of the automobile concerns realized that in advertising a car it is a good idea to show one or two persons sitting in their machine, each with a smile indicating satisfaction.

Gas ranges have been on the market for many years, so have many of the other gas appliances. It is necessary, in advertising them, to always seek a new note.

The regulated gas range is a great improvement over the older types of kitchen stoves. It is an appliance which one would consider an easy seller, merely because of its many advantages. But this is not always the case. If it is advertised in the ordinary way many people are inclined to pass the advertisements by, mostly because they have seen thousands of such ads and do not take the trouble to read the printed matter, considering it the same old thing. Such ads generally show a line drawing of the stove by itself or a sketch of the stove with a woman turning a valve or putting something in the oven. We can realize how old are these ideas and how valueless they must be today by observing how it was done in the days of the Gibson girls.

Don't Lag Behind the Times!
You wouldn't ride in a stagecoach today if you wanted to get anywhere. Why should you cook with an antiquated gas stove?
There's just one argument in favor of the old stove. If you turned in a stagecoach you couldn't expect an allowance on the purchase of an airplane. But, if you act quickly, your old stove is worth a cash discount on the purchase of the most up-to-date cooking appliance —the oven heat regulated gas range.
Telephone: TRiangle 7500
The Brooklyn Union Gas Company

Modern Range Advertising

When an old and well-advertised appliance is improved one must strike a new note in his advertising to bring the message of that improvement to the public. The central illustrated ad shows one way in which this can be done. The drawing serves to arouse the reader's curiosity. He wonders what is the relation of the stage coach and airplane to the stoves. While the picture really tells its own story, he is inclined to follow the reading matter. Thus he learns that we now have a gas oven which will operate by itself. In the case of the woman reader, such an ad proves even more popular, largely because of her superior curiosity.

The Big Idea

There are many other ways in which the story of the regulated gas oven can be put across by the use of illustrations. The big idea is to show life in the sketch. An inanimate object like a gas range, standing alone, is not likely to attract much attention. And it is a good idea to avoid lengthy reading material. This tires the reader and he loses interest. Overworked stock phrases also should be shunned. Some advertisers put too much faith in a snappy headline. The snappy headline over an ad does attract attention, but you will probably realize from your own experience that in such cases the headline is all the average reader will bother about.

The success of the tabloids has been largely due to the picture's appeal to the average person. Our company is convinced that the illustrated method of advertising is the best.

In the good old days—

when mother was a girl

The Plumber and the Gas Company

By Special Correspondent

THE plumber and the gas man have been talking cooperation for a number of years, but only recently have they come to realize that their connection with one another is an important one. Their respective fields of endeavor touch each other at many points and their interests are the same, or could be made the same.

Unquestionably they should be imbued with a spirit of mutual helpfulness, of real cooperation. Nevertheless, it is true that such cooperation does not always exist. It is also true that the basis on which these two groups can really cooperate with each other and do business together to their mutual advantage has not been properly defined, or, at least, has not been correctly explained. There are rather marked differences in opinion, sometimes amounting to actual animosity, which may be due to the fact that the parties concerned do not understand each other and that in the heat of disagreement they separate with the fixed idea of not believing it worth while to try to come to an understanding.

Some Objections

The gas company calls the plumber difficult, hard to get along with, very apt to be steeped in empirical lore, gained from many years of experience, and uninformed as to the actual reasons why certain practice should be followed out and thereby somewhat inclined to abandon that practice for some idea of his own for no good reason at all. The gas company has often found the plumber to be careless, just because he at times does not realize the importance of his instructions. The gas company has found it difficult at times to make the plumber to see the error of certain practice, to adopt new ideas. It has found the plumber unwilling to learn to do his job better, unwilling to spend time and money in becoming acquainted with the new fields into which gas has entered, for example, the industrial field. It has found the plumber to be improperly equipped to aid it in industrial business. We refer here to the average plumber and in certain cases he is also the exceptional plumber. For in large cities the average plumber cannot be rightly classed as above. At any rate, it is important to remember that we are sometimes considering the worst cases rather than the best, or even the average. On the other hand, it will be found that the experience and intelligence of the plumber in the small town are very apt to be far below that of his fellow in the large cities.

Is it correct to say that some plumbers are not to be trusted to make proper installation of gas burning appliances? Our own experience answers that it is. Even the simple job of connecting an ordinary coil type tank water heater is at times bungled. In one case that has come to our attention the plumber connected this water heater as if it were an instantaneous heater, that is, permitting the water to run through the coil without providing for circulation of the heated water in the boiler. The result was that when the heater was operated for sufficient time to produce a mass of hot water, very little hot water was obtained and, in fact, after the water in the hot water pipe had been withdrawn, no further hot water was obtainable no matter how long the heater was used. The mistake itself was perhaps of not the same significance as the retort of the plumber, when his error was called to his attention, which was, that he, the plumber, was not supposed to know about such things.

If this is the attitude of the plumber, then the gas company has a good reason for calling him difficult and unintelligent. If the plumber refuses to learn about gas, if he refuses to study the problems of heat and heating from the standpoint of gas, if he refuses to learn to distinguish between a good and bad appliance, or to learn to adjust the burner properly, then the gas company is right in refusing to deal with him. We must, however, say here that the average plumber, when he does refuse, has a deeper reason for doing so than merely his inherent inertia or lack of ambition to learn. We shall deal with this matter a little more in detail later.

Selling Inferior Appliances

The gas company has also often found fault with the plumber because he has been active in selling appliances of poor construction and poor efficiency in competition with the gas company, which is vigorously trying to maintain standards in the community by selling high grade appliances. The fundamental causes for this may be many, and they are hard to distinguish between. It may be purely a matter of competition, and the sole desire of the plumber may be to make his discount and sell any kind of appliance without consideration of the interests of anybody concerned except his own. This, of course, happens. The gas company is rightly incensed against this type of plumber and, in fact, the plumbers themselves, that is, the average high-grade plumber, has litle use for this sort of fellow. He knows that he is a detriment to his industry. The gas company is very much concerned, because when the faulty appliance fails to give good service

the blame is usually placed upon the gas used and not upon the appliance.

On the other hand, the problem sometimes arises wherein it becomes important to introduce gas into a certain part of the community that cannot afford to spend enough money to buy the best type of range or water heater. The plumber comes in contact with such people and he is anxious to make a sale. What can he do but advocate an appliance that is cheaper than the ones that he knows will do the work best? This is the problem that the gas company will have to deal with at all times, even when they have the full support of the plumber.

The Plumber's Side

We have given, in part, the gas company's side in this matter. It would now be well to consider the plumber's side. We have had the good fortune of interviewing one of the most prominent and progressive plumbers and heating contractors in a large eastern city. This gentleman is primarily concerned in remodeling and overhauling work. In fact, he is a specialist in this line. He sells ranges, water heaters, space heaters, furnaces and the like, and has a fine display of these appliances in his establishment. He was the president of the local Master Plumbers' Association during 1926 and 1927, and for six years he has been the chairman of the education committee of that association. He was a member of the committee that his Association of Master Plumbers sent to the convention of the American Gas Association that was held in Atlantic City in 1923 for the purpose of presenting there the views of the plumber as to the proper basis on which he could cooperate with the gas industry. The remarks that we include in the remainder of this article on the plumber's point of view are based on what he told us.

It is first necessary to understand that the average plumber is confronted with an overhead of thirty per cent. This is not very large as compared with other industries, but it is nevertheless a difficult matter for the plumber to meet it under the conditions that exist today, as far as his relations with the gas company are concerned. This matter of the thirty per cent overhead is the crux of the whole problem. It might also be mentioned that the plumber, operating any sort of business at all, must figure a return of ten per cent as net profit. It is on these figures that the average plumber does his business. These figures are based on the returns from thousands of plumbers operating in 788 cities of the United States. Furthermore, they are based on the selling price of the merchandise or service and not on the cost price.

The Plumber and Appliance Sales

The plumber sells gas appliances. Furthermore, he is called upon to connect gas appliances that are sold by others, for example, by the gas companies. The latter, at least in the larger cities, cannot accommodate the numerous buyers of appliances by connecting the range, water heaters and the like that they purchase. It is therefore quite common to tell the buyer of the appliance that his neighborhood plumber will connect it for her.

The relation of the plumber and the gas company and the proper basis on which the two can cooperate and do business together include both the selling of appliances and connecting them in the customer's premises. In fact, these two phases of the business are irrevocably interconnected from the standpoint of the plumber and both must be solved before there can be any real cooperation.

Here it should be mentioned that in certain localities the feeling between the plumber and the gas company has been somewhat unfriendly. The plumber has been known not only to advise the prospective customer, who does not know whether he wants a gas fired appliance or not, to choose any appliance provided it does not burn gas, but also to discourage the customer who has decided that he wants the gas appliance in favor of another. This is an unhealthy situation and the cumulative effect of such propaganda is bound to be felt by the gas company in the loss of some business and of good will.

The Reason For It All

A frank question relative to this attitude of the plumber brought the answer that, under present conditions, he cannot sell gas appliances and make enough money to live on. Furthermore, he cannot make any money out of hooking up appliances sold by the gas company. It is stated that the average charge is between six and twenty-five dollars for this service, and the plumber's profit is between sixty cents and two and one-half dollars. Furthermore, gas companies often connect the appliance free of charge when running sales campaigns.

We have been given exact information to illustrate the contention of the plumber. The average plumber receives a discount of twenty and again five per cent on domestic appliances. This discount is less than his overhead and he therefore cannot hope to make his overhead when the regular customer's list price is maintained. He must maintain this price if the gas company does likewise. If he sells gas appliances he will therefore lose money. This is his claim.

On the other hand, he avers he can give many examples where the gas company has sold the domestic appliance at prices which represented what he himself has had to pay the manufacturer for the appliance. Under such conditions he is hopelessly lost. The manufacturer can afford to give a higher discount to the gas company for the reason that the latter can purchase carload lots of appliances at lower prices than the plumber who buys smaller quantities.

He cites instances such as the following: A radiant fire heater, listed at $18 apiece, is sold to the plumber at 20 per cent discount, costing him $14.10 apiece. The gas company, on the other hand, sells the same appliance for $12.50 and will perhaps close it out at $10.25 at the end of the sale. He claims that the money made in hooking up the appliance sold by the gas company to a customer is far too little to enable him to do business. He states that a charge of $25, for example, for hooking up a water heater sold by the gas company for $300 means a

profit of $2.50 on a total sale of $325, which is far too little. He also protests the statement of the gas appliance salesman, made perhaps in his eagerness to effect a sale, that the plumber will connect the range, or water heater, or space heater for a couple of dollars. He feels that this is an unwarranted interference in his business. He indignantly asks what right has the gas company to tell its customer how much to pay for the plumber's service. He furthermore states that he has not been able to obtain any relief from the gas company.

Cannot Sell or Cooperate

He therefore concludes that he cannot sell gas appliances, although he is himself thoroughly sold on them. It is a matter of his bread and butter. Thus when a house owner comes to him and says that he has $300 or more to spend on an instantaneous gas heater, he advises the purchase of a coal heater and that the remainder of the money, $150 or so, be spent in improving the bathroom, in installing a shower, etc., etc. He says he must do this in order to make enough money to continue in business, for the manufacturers of these appliances allow him his dealer's discount even though he himself may not make the sale. When they sell direct they protect him. He further concludes in stating that as long as these conditions exist he, an average plumber, must perforce continue in his stand.

Is there a way out? He says there is. It is not, furthermore, in the direction of financial assistance, in the gas company financing the sale in case the customer buys on time. He has many financial companies to turn to that will finance the sale with no trouble or expense whatsoever to him. What then is his plan?

The Plan

He wants the gas company to reserve sufficient commission for him on every sale that it makes when it advises the customer to get the plumber to connect the range, etc. Thus, he claims that he would be satisfied merely with a thirty per cent allowance which would cover his overhead, when he himself has no part in making the sale. On the other hand, when he does take part, he wants an extra ten per cent for his net profit. He admits that the gas company may have to increase the price of the appliance to work in this manner, but he claims as well that the appliances are too low priced now. If the gas company raises the price of the appliance and maintains that price under all conditions and, when it does reduce it, arranges to take care of the plumber in some equitable manner, then he himself can sell gas appliances and assist in building good will for the gas company, for he will then be able to make his overhead and his ten per cent profit.

This is his plan, and he claims it is the only plan that will work to his satisfaction. It is a plan that will enable him to earn sufficient to do business in gas appliances. If there is another plan which will do likewise, he is willing to listen to it. But he reiterates that his overhead is thirty per cent, which is alone more than his allowed discount, and he must get at least that, if not more. If he cannot get his terms he not only refuses to connect up gas appliances sold by the gas company but does all in his power to divert sales from gas appliances to those in which he can make some money.

This is the case. What is is the answer? It would seem apropos for the gas industry to present their case to the plumber. Perhaps a final, mutually satisfactory solution of the problem could then be reached.

ASSOCIATES—NOT COMPETITORS

In discussing "Merchandising with a Punch" at the recent Pacific Coast Sales Conference, J. E. Davis, general manager of The Peoples Gas Stores, Inc., made the following observations:

"The primary function of the company is to sell gas and as a function of selling it becomes necessary to create a market for the product. Therefore, the men in charge of merchandising should know the gas business. In order to increase the use of gas it is only natural that the company engage in pioneering work and it should not leave to others the responsibility of providing a market for the gas which it produces.

"Our policy is to market quality merchandise which gives the utmost in gas service, combined with convenience and attractiveness. We think the gas company is looked to for the last word in efficient and economical gas-burning appliances because that is our specialty and we should be recognized as the best authority in telling people how best they can use our product.

"New uses for gas must be developed and promoted by the gas man. Dealers are in business for a profit and they can only market appliances which already have a public acceptance. A gas company cannot by itself market all the gas-burning appliances which the market is able to absorb and, consequently, there is business for the dealers. We feel that these merchants are our associates and not our competitors. We only recognize as our competitors those industries which are seeking a portion of the public's dollar which should be ours.

"In order to effect as wide a distribution of gas appliances as possible we must market our goods at a price which will permit profit making by other merchants. The Peoples Gas Stores is the balance wheel on gas merchandising in the city of Chicago, but we feel that the more merchants we have working for us the better off we are. There are very definite advantages to be derived from this policy by both the Peoples Gas Stores and the merchants, as aggressive selling and productive advertising creates a public demand.

"In order to assure the selling of quality merchandise we lead the way by marketing those appliances which it is possible to service well. One obvious reason for this is to reduce service costs."

Are We to Have Refrigeration With Gas?

By C. H. Light

The Peoples Gas Light & Coke Company

FROM the time, early in 1920, when The Peoples Gas Light & Coke Company first promoted the sale of a gas-fired unit, there has been an endless procession of other gas companies seeking to influence this manufacturer to extend his distribution to their territories. The satisfactory performance the unit has given and the extremely low cost of servicing have attracted the attention of gas men everywhere. In recognition of this interest, the American Gas Association set up a separate committee to encourage the manufacturer and to promote the sale of domestic refrigeration. Early in 1927 we had the satisfaction of knowing that in addition to the manufacturer already referred to, there were two others actively engaged in producing domestic units and fully equipped to take care of distribution on a national scale.

GAS REFRIGERATION WILL BE SOLD IF IT HAS THE QUALIFICATIONS

In this paper, presented at the recent meeting of the Illinois Gas Association at Springfield, Mr. Light deals frankly with the objections that have been raised as regards the lack of activity in marketing gas refrigerators. If, as he maintains, such objections are trivial and unwarranted, and if this appliance is a needed device in the home and elsewhere, we need have no fear that its sale will not be vigorously pushed.—Editor.

Statistics obtained from these manufacturers show that the gas industry is promoting the sale of this new equipment on a pitifully small scale. They show, for instance, that only 6.5 per cent of the gas companies in the country have made any attempt to merchandise one type of appliance—also that of the total sales of this appliance during 1927, 32 per cent were made through miscellaneous dealers and 68 per cent through gas companies.

Another type of gas refrigerator has had a somewhat greater distribution, about 40 per cent of the total gas companies having purchased one or more. However, the combined sales of eight of the companies is more than 50 per cent of the total sales, and one-fourth of the gas companies purchased only two or less.

In view of the excellent showing of these units, as reported by companies that have been most active in the promotion of refrigeration, it is indeed difficult to understand the peculiar and highly critical attitude of the industry in general towards this important gas load. In fact, the extremely conservative attitude of the industry would make us appear to be leaning over backwards in our desire to avoid any entangling alliance with progress.

Every conceivable objection seems to have been raised as an excuse to "let George do it." The most trivial details, such as in any other phase of our business would be considered part of the normal routine adjustment or service, have been magnified in our minds until they appear to be absolutely insurmountable.

In analyzing these multitudinous objections, it is found that they may be boiled down to several very definite factors which, if true, might be considered just cause for some hesitation in extensive sales promotion of these new appliances. They are as follows:

1. That gas-fired refrigeration units are still in the experimental stage.
2. That the load is too small to justify the necessary promotional expense.
3. That the sales price is so high that merchandising profits must be sacrificed or sales limited.
4. That the cost of servicing is excessive.
5. That the gas burners and controls are unsatisfactory.

During the past year the writer has had opportunity to inspect numerous installations in various parts of the country, to talk with many users, and to discuss the conditions in other cities with executives of those companies most aggressive in the promotion of gas refrigeration. The effect of these investigations in every case has been to strengthen the belief in the fundamental principles and inherent advantages of the appliances now available to the industry.

Let us consider, one at a time, the specific objections to refrigeration with gas previously enumerated:

1. That the Gas-Fired Refrigeration Units Are Still in the Experimental Stage

The records of four companies whose combined sales approximate 25 per cent of the total sales in 1927 seem to definitely disprove this. With a few isolated exceptions no sales have been cancelled because of the failure of the appliance to give satis-

factory refrigeration. In no case has a unit failed to function except from causes directly traceable to an interruption or fluctuation of gas or water supply.

2. That the Load Is Too Small to Justify the Necessary Promotional Expense

It is true that there are several gas appliances which offer a greater individual monthly gas consumption. It is doubtful, however, whether there are any that in any way approach the hourly, daily, or yearly load factor of domestic refrigeration. The decrease in consumption of our three, five, and ten light meters is a matter of tremendous concern to every utility executive. Extended discussions of this occupy a large part of utility conventions. The underlying reasons for this reduction are generally agreed to be the changing habits of people, the large increase in apartment houses, the greater use of automobiles, and the tendency of modern families to spend less time in the home.

In many cities, as in Chicago, where apartments predominate, thousands of customers use gas only for cooking so that many customers are served at a loss. The heating of these buildings and the heating of water are taken care of by the owners, and are not prospective business for the gas company except at very low rates.

On the other hand, refrigeration is an absolute necessity. The range may be used only once a day, but the ice box must be kept cold continuously.

3. That the Sales Price Is So High That Merchandising Profits Must Be Sacrificed or Sales Limited

It is true that our electrical competitors have had the advantage of several extremely low priced units, resulting in increased sales resistance toward the available gas refrigerators. However, it is also true that where cabinet construction, capacity, and finish are comparable, the retail price of electric refrigerators have not been lower than those of the gas-fired units.

This year we have available cabinets both in the remote control type and in the self-contained unit type, equivalent in size, capacity, and price to those of any recognized electrical competitor.

As to merchandising profit, we must ask ourselves frankly, "Just what are we in business for?"

If the primary purpose of the industry is merchandising kitchen cabinets, pots, and pans, bric-a-brac, or what-have-you, then we are probably justified in refusing to consider anything that won't show the proper capital turn-over and profit.

If, on the other hand, our primary purpose is to promote the sale of gas through such agencies as will offer the greatest possible use of our stockholders' investment in plant capacity, etc., then it seems that any thought of merchandising profit on gas refrigeration can, at least for the time being, be given secondary consideration.

It has been said that during the early stages of the industry's promotion of gas for domestic cooking it was not uncommon for some of the companies to give away ranges. Refrigeration with gas will add approximately sixty per cent to the average domestic consumption. Surely this is well worth promoting, even at the expense of some merchandise profit.

4. That the Cost of Servicing Is Excessive

The Peoples Gas Light & Coke Company's experience with gas refrigeration dates back to 1921. Careful examination of service records indicates that, on an average, one service call a year is all that has been necessary, also that the cost of this service, although in no case borne by the customer, has not exceeded $2.50 per machine per year.

It is illuminating to contrast this with the report of an electric utility which shows that the cost of servicing during the guarantee period was far greater than the income from the unit itself, and in passing, we must consider what happens to the poor customer after the free service period.

An analysis of the service records of the four companies previously referred to shows that, although considerable servicing has been necessary because of adjustments of the gas burner or the water control, these sources of complaint are very materially reduced since these devices have been improved.

A statement from a company which has been the leader in the promotion of refrigeration with gas is as follows:

"Our service costs last month were less than during a similar period six months ago, when we had less than one-fifth of the units in service that we have now."

5. That the Gas Burners and Controls Are Unsatisfactory

Again it seems well to reiterate that with the exception of a few isolated cases no gas-fired unit has failed in service because of defects in the unit itself, and that in all cases of "no refrigeration" the cause has been directly traceable to either the gas burner or the water control.

Both of these complaints seem to have been confined to one type of gas unit. Today it can be authoritatively stated that these auxiliary devices have been greatly simplified and improved, and that the probability of interruption in service has been correspondingly minimized.

Further improvement will undoubtedly be made, but the data for such changes must come primarily from the industry itself. To this end the very closest contact and confidence between the manufacturers and the utility is of the most vital importance.

The attention of the industry is directed to two outstanding examples of the successful promotion of gas refrigeration.

First, to the Consolidated Gas Company of New York, which during 1927 sold by far a greater number of gas units than any other company, and particularly to their success in interesting architects and builders in the extension of this service to very large apartment buildings and other similar projects.

Second, to the Laclede Gas Light Company of St. Louis, whose unique campaign in conjunction with the Master Plumbers' Association has resulted in a very interesting development of a hitherto much neglected dealer outlet.

What has been done by these two companies can be and should have been duplicated, at least to

some extent, by every gas company in the country. Even the most hardened unbeliever will find it difficult to refuse to follow the example of these pioneers.

Summary

In summarizing, it may be said:

1. That gas refrigeration has been developed to the point where it is comparable in every respect with the best available electrical units.

2. That the cost of operation to the consumer will be equal to or less than any competitive unit of the same capacity.

3. That the cost of servicing, either to the utility or to the consumer, will be lower than any competitive unit, and that depreciation will be substantially less.

4. That the utility, whether gas, electric, or a combination of both, has a definite responsibility to the community which it serves to encourage the development of and promote the use of only those appliances which will render the greatest service at the lowest possible cost.

5. That refrigeration with gas has certain fundamental and inherent advantages which make it obligatory to the industry to use its best effort on the further development of present equipment, and on the extension of this service to other uses.

6. That the greatest and most rapid development of gas refrigeration is only possible through the united effort of the gas industry in promoting such equipment on a national scale.

7. That refrigeration with gas has tremendous additional possibilities, in home cooling, air conditioning, and commercial uses, also that the development of these larger possibilities can come only through the broad vision of the present refrigeration field and the closest practical coordination of the utility and the manufacturer.

Our industry has unlimited resources in money and brains and many times in the past has demonstrated its ability to overcome apparently insurmountable obstacles. In comparison with these the petty obstacles which seem to stand in the way of refrigeration with gas are insignificant, and must not be allowed to prevent us from expanding into this new field which is just as important as cooking to our domestic load.

Refrigeration with gas, I believe, marks a crossroad in our business; will we prove our ability to progress by giving our product its rightful place? Or will we admit definitely that we are ready to relinquish the domestic load?

ARE WE TO HAVE REFRIGERATION WITH GAS?

AMMONIA COMPARED WITH OTHER REFRIGERANTS

By W. F. Schaphorst, M.E.

THIS question is often asked: "Why is ammonia usually preferred as a refrigerant?" Engineers prefer it in large refrigerating plants because it is more efficient and more economical than other refrigerants. The table below tells the story in a nutshell. One pound of ammonia, approximately, will absorb 500 heat units. Its closest competitor is ethyle chloride, but 3.24 pounds of ethyle ammonia will do. Next comes methyl chloride, which is nearly as good as ethyle chloride. The poorest of all is carbon dioxide, 6.82 pounds of which are needed to do what one pound of ammonia will do. Yet carbon dioxide is commonly used in spite of the high pressure under which it must be operated. This is because of the fact that carbon dioxide has no odor even when it leaks. Consequently it does not harm food products or irritate human beings.

The following table lists the common refrigerants in use and compares them with ammonia.

Refrigerant	Lbs. of refrigerant required to absorb 500 heat units
Ammonia NH_3	1
Sulphur Dioxide SO_2	3.4
Isolutane C_4H_{10}	3.9
Ethyle Chloride C_2H_5CL	3.24
Methyle Chloride CH_3CL	3.24
Carbon Bisulphide CS_2	3.35
Ethyle Ether $(C_2H_3)_2O$	3.46
Propane C_2H_3	3.67
Chloroform $CHCL_3$	4.54
Carbon Tetrachlorid CCL_4	4.89
Carbon Dioxide CO_2	6.82

At Last; the All-Gas Apartment

The first all-gas apartment in the Greater New York area, and possibly in the United States, has recently been built at Bayside, Long Island.

It consists of a two-story house of four-room-and-bath apartments designed to rent for a modest sum. Each kitchen has been equipped with a combination gas range and gas refrigerator. The building is entirely heated by a gas-fired furnace automatically controlled, and hot water is provided by gas heat.

The cost of gas for stoves, refrigerators, heat and hot water is all included in the monthly rental. It is estimated that each apartment will consume about 200,000 cubic feet of gas a year, as compared with a local family average of 40,000 cubic feet a year when gas is not used for all purposes.

A Brief Interview on the Laundry Question

Why one housewife sends her laundry out

By Special Correspondent

THE place where the family laundering is performed is gradually changing from the home to the large outside laundries which heretofore depended largely on the washing and ironing of collars for the bulk of their business.

Regardless of the reasons for this condition it is sufficiently reassuring to know that the gas industry possesses the means for greatly slowing up such a movement, if indeed it cannot stop it entirely. Certainly the several gas-consuming appliances intended to handle laundering in the home, if backed by a well thought out selling plan, will accomplish this end. The thought that many gas companies, perhaps, might not be wholly acquainted with the attitude of the housewife toward having the bulk of her laundering done at home constituted the urge for interviewing a prospect on this subject.

This woman is well able to install a complete set of laundering equipment, from start to finish, and yet she now sends her wash out. When asked whether she preferred to have this task performed in her home she answered emphatically, "yes." This seemed a paradox, particularly when she agreed that the laundering could be done at home cheaper and better than on the outside. It developed that her main reasons for having this work done outside the home were twofold.

First: She felt that her cellar was so dusty that it did not offer the proper place for the laundering.

Second: The regularity of the procedure appealed to her. That is, she was never thrown out of schedule by uncertainty of the weather.

Her objections to having her laundering done outside of the home were interesting and should furnish ammunition for gas salesmen in general. They were as follows:

First: Clothes did not last as long. This housewife, being of a very methodical turn, had kept a check on this feature and her figures led her to declare that clothes washed at home last one-third longer than if done on the outside. Her explanation was that the outside laundry washes all pieces with the same intensity, so to speak. That is, the grimiest piece governs the time for all the items, consequently the cleaner pieces are overly subjected to the scouring process.

Second: She by no means liked the idea of her clothes being mixed in with other peoples'.

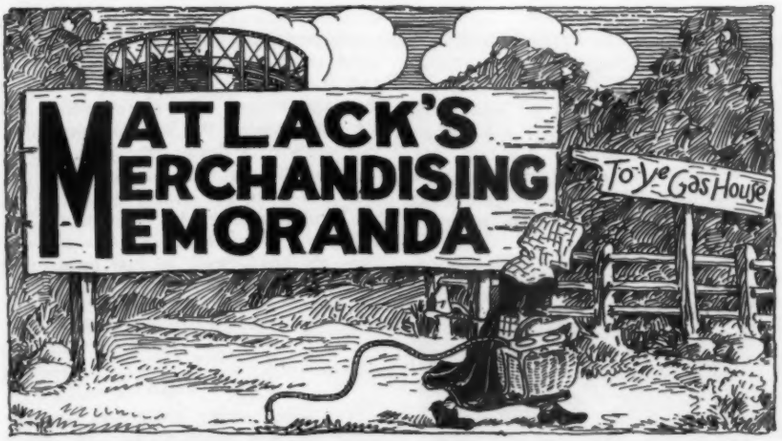
Third: Loss in various pieces from time to time, while of no great moment financially, produced a certain undesirable irritation.

Fourth: She declared that her laundry looked much better when done at home.

There seems to be but one worthwile answer to the above situation—the all-gas home as preferably sponsored under the Blue Star Plan. In line with this thought comes the suggestion of pushing the gas house heating plant, thereby assuring a clean cellar. Then later can follow the pushing of laundry equipment.

The salesmen should make a canvass or rather survey of their prospects, study the matter of laundering, and put their proposition across.

Come to Your Gas Company's
Home Laundry Appliance
EXHIBIT
March 12-26
at
Your Nearest Gas Office
Free!
Washday Now
Becomes a song...
Labor Saving—Time Saving—Modern Methods
COME!—see for yourself. Your Gas Company cordially invites you. Everything to make your wash-day easier—the washer—the dryer—the ironer—the automatic water heater—all operated automatically—with Gas—Your clothes last twice as long.
This exhibit of home laundry appliances will interest you and everyone—Do not fail to come!—Any day, except Sunday, from March 12 to 26, between the hours of 9 to 5, your Gas Company's offices will be open to you.
CENTRAL UNION GAS COMPANY
NORTHERN UNION GAS COMPANY
EVERYBODY INVITED
Proper publicity will help



WILL DIRECT ADVERTISING DO IT?

We admit that we do not know whether a coupon in your advertisement will capture the elusive customer or not, nor have we worked out any favored formula to do what advertising should do—sell merchandise in volume at a profit. After a first reading of "What about advertising" we wonder if sales of home appliances cannot be materially increased by direct advertising.

It seems that the theoretical cost (utilities figure thus) of house-to-house selling is 10 per cent. and 15 per cent, and the actual, with no consideration of cost of man turnover, is somewhat higher. This being true what can be done by using four United States postal cards per month to replace house-to-house solicitor?

The average number of gas customers per family in most cities may be taken as 75 per cent., the average number of meters covered per salesman as 1,000, the average monthly sales per man per meter per year as $5.00, or $416.66 2/3 per month. At 10 per cent. this would equal a commission of $41.66 2/3 and at 15 per cent. a commission of $62.30. Now let's take an average of the two which we find to be $51.98. You cannot expect any self-respecting salesman to work for that—yet merely to complete our illustration, let us assume we have a man that does it. Now we will assume that this man is the unusual (you'll have to admit he is that) and that he works seven hours per day, forty-two hours each week or one hundred and eighty-two hours per month and visits 5.48 prospective customers per day, or covers his territory twice each month (another outrageous assumption).

From the average commission $51.98 we find the cost per call would be better than .025 cents, which is very cheap, but the cost per sale—what about that? Assume his average sale amounted to $60. Then out of 200 calls he will have made 8.66 sales or attained a sales average of 4.33 per cent.

If we now turn this calling over to United States postal cards we find that we can make four calls at about the same cost; 4,000 cards at one cent each—$40.00, $2.00 per M printing—$8.00, leaving $3.98 for running cards through the addressograph. Here is an opportunity for those who are interested in advertising and who are having to combat the man turnover problem to give advertising a real tryout. It must be borne in mind that the postal card has to contain a definite, short, selling message and that it in no way is to supplant newspaper advertising nor house-to-house salesmen. Quite the contrary, it should tie into the newspaper advertising and above all, the preparation of the copy for the cards should be assigned to some one with explicit instruction not to just "get up" an ad, but to devise a piece of copy that will sell an article of merchandise. Such a plan might be tested out in a given district. In any case it should be given as thorough a test and as much grooming as you would give the salesman.

Better not venture it all than to try it half-heartedly and thus pile up other charges against advertising. The theory back of this idea of the use of direct advertising is that by increasing the calls and by the added insurance of securing some attention from every call sales will increase.

BUZZER SYSTEM

Out where the West begins there is a gas man who has rigged up a buzzer system between the cashier's cage and the sales desk for the purpose of increasing sales. Here is how it works: Mrs. Jones steps up to the cashier's cage and makes the final payment on her gas range. Miss Cashier thanks her and, as she turns away from the cage, a button is pressed which informs the sales desk that a prospect is approaching. The sales person receiving the signal approaches Mrs. Jones and with a few well chosen words leads her over to "see a wonderful new laundry dryer we have just received."

THE MODERN JONAH

Colonel Oscar H. Fogg, president of the A. G. A., in his address before the New England Gas Association called attention to the subject of gas sales per meter that deserves more than passing consideration. He is quoted, in part, below.

"One who has done much to develop progressive sales policies in our business says bluntly, in a recent letter, that 'the gas industry has "hogged" the appliance business to its own detriment—to the detriment of the appliance manufacturers and to the detriment of the sales per meter.'

"It has been this very tendency to monopolize appliance sales that has reacted so harmfully upon our domestic market.

"Our domestic consumption per meter, long the standby of our business, shows the least advance of any general class of gas consumption. I say domestic, meaning the ordinary household uses of gas, excluding house heating. Additional sales per customer is an outstanding need of our domestic situation—a greater use of the present investment and the conversion into profitable customers of those now served at a loss."

OH! FOR THE OLD COOKY DAYS

The homes are said to be failing in their great duty, but at least they keep places open where children can come home to sleep.—Newark (Ohio) Advo-

cate. We bet that fellow over in Newark is wondering what has become of the cooky jar, the pies and cakes that mother use to bake on Saturday. That was a great institution—that home bakery—and to think there was no self-action range in that bygone day! Now what causes that, and what can our home service departments do to recall the home-baked cooky, etc., etc.?

THE SANITARY GOSPEL

April is an ideal time to start to spread the gospel of sanitary waste disposal, the time to tell folks what an asset a gas incinerator is to the home. Winter, with its grime and garbage disposal problem, is fresh in the mind of the home manager and if you will go to her with an appliance that will rid her home of waste materials, including garbage, she will listen to your story. The mister will be receptive, too, for don't forget that, in most homes, he is confronted with the problem as well as the woman. If you have done nothing to develop incinerator prospects, here is a suggestion. See every person in your city that heats his home with gas. circularize and call upon the doctors and folks who dwell in the better class neighborhoods. Don't let anyone tell you that there is no market for incinerators. Remember the man who thought the industry would always have to sell ranges at cost? What's become of him, anyhow?

GAS BOXES

April ushers in the ice man or the gas refrigerator—whichever you choose. The Consolidated, New York, has advertised gas refrigeration all winter and J. J. Burns, St. Louis, staged a Christmas sale of gas boxes. And, oh, yes, gas refrigerator manufacturers have come out with color to tie into the other schemes to brighten up the woman's workshop.

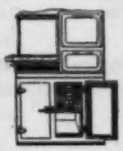
Save Space with

THE COMBINATION RANGE AND GAS REFRIGERATOR

They've never been seen together before!...Nevertheless, their marriage comes as a welcome piece of news...especially to those who like to entertain, but lack the space usually required for perfect hospitality.

GAS SERVICE DOES IT!

Just imagine—cooking and freezing with the same appliance ...a roast chicken and a tray-ful of ice cubes, both prepared by Gas!



Your Gas Company again takes the lead in making this useful equipment available to its customers. For further information on the combination Gas Range and Gas Refrigerator, mail the attached coupon today.

CONSOLIDATED GAS COMPANY

GEO. B. CORTELYOU, PRESIDENT

ASK YOUR GAS COMPANY

130 East Fifteenth Street, N. Y. C.
Room 1230:

Kindly send me further information about the Combination Gas Range and Gas Refrigerator; also a copy of your booklet entitled, "The Flame That Freezes."

Name .....

Address .....

AH, WOE!

The manufacturer who permits his ambassadors to load-up dealers by promising them quick sales by high-pressure methods is short-sighted. It seems everyone should know the promising representative who puts through a good-sized order on promise, yet every now and then we stumble into stock rooms that are littered with merchandise that did not move on the high-pressure plan. We know of a dealer who took on one of these talkers a short time ago and who has over six dozen appliances on his hands; returned by customers. His direct loss is great and his loss of prestige—oh, boy!—well, he just hopes that salesman crosses his path some day."

FREE TRIALS

Free water heater trials, we have noticed, turn into friendly customers where the gas man is featuring a water heater with a very low gas consumption, less than 15,000 B.t.u. per hour. Men who know the water heater "game," say that unless the heater is designed to consume a small amount of gas per hour the free trial is not so good. The current theory with good merchandisers is that where it is desired to sell a heavy demand heater it is best to sell it on the basis of actual customer requirements and to explain that such services cost money; not a lot of money, but a reasonable amount for service rendered.

MURDER WILL OUT

Here is another reason the per meter sendout is on the wane:

Real Estate Agent (trying to interest a fair flapper): "Let me sell you a nice home?"

Fair Flapper: "Buy a home? I should say not. I haven't a bit of use for one. I was born in a hospital—was educated in a college—was courted in an auto—was married in a church—we live out of a paper bag—lovely delicatessen right near—spend mornings playing golf—the afternoons at the club playing bridge—at night we dance or go to the movies—and when I die I will be buried from the undertaker's—all I need is a garage with a bedroom above. Nix on the home."—Selected.

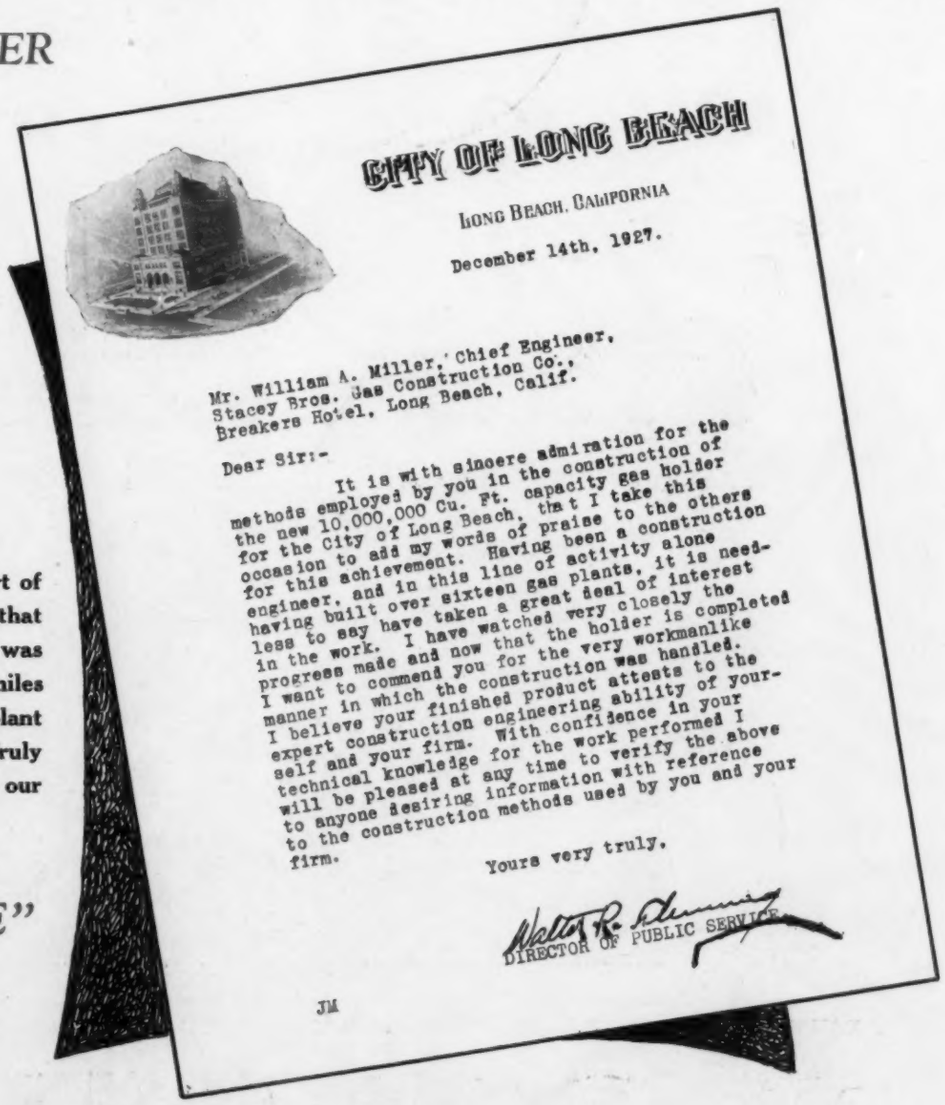
AN ACHIEVEMENT UNEQUALLED!

Our contract called for the completion of the ten million cubic foot gas holder and foundation with 17-foot excavation for Long Beach, California, in eight months. ALL OF THE WORK WAS FINISHED AND GAS TURNED ON IN SEVEN MONTHS.

Contract Awarded—May 5, 1927.
Excavation commenced—May 6, 1927.
Excavation completed—May 28, 1927.
Erection of Steelwork begun—June 13, 1927.
Erection of Steelwork Finished—November 28, 1927.

December 6th, 1927, holder entirely completed, including three coats of paint, retaining wall and back fill.

THIS LETTER SPEAKS FOR ITSELF



CITY OF LONG BEACH

LONG BEACH, CALIFORNIA

December 14th, 1927.

Mr. William A. Miller, Chief Engineer,
Stacey Bros. Gas Construction Co.,
Breakers Hotel, Long Beach, Calif.

Dear Sir:-

It is with sincere admiration for the methods employed by you in the construction of the new 10,000,000 Cu. Ft. capacity gas holder for the City of Long Beach, that I take this occasion to add my words of praise to the others for this achievement. Having been a construction engineer, and in this line of activity alone having built over sixteen gas plants, it is needless to say have taken a great deal of interest in the work. I have watched very closely the progress made and now that the holder is completed I want to commend you for the very workmanlike manner in which the construction was handled. I believe your finished product attests to the expert construction engineering ability of yourself and your firm. With confidence in your technical knowledge for the work performed I will be pleased at any time to verify the above to anyone desiring information with reference to the construction methods used by you and your firm.

Yours very truly,

Walter R. Summers
DIRECTOR OF PUBLIC SERVICE

JM

The remarkable part of this achievement is that all the steelwork was brought over 3,000 miles from the fabricating plant in Cincinnati, Ohio. Truly a supreme test of our

"ABILITY TO SERVE"

STACEY BROTHERS GAS CONSTRUCTION CO.

NEW YORK: 75 West Street — **CINCINNATI, OHIO** — **BOSTON:** Eastern Service Co.

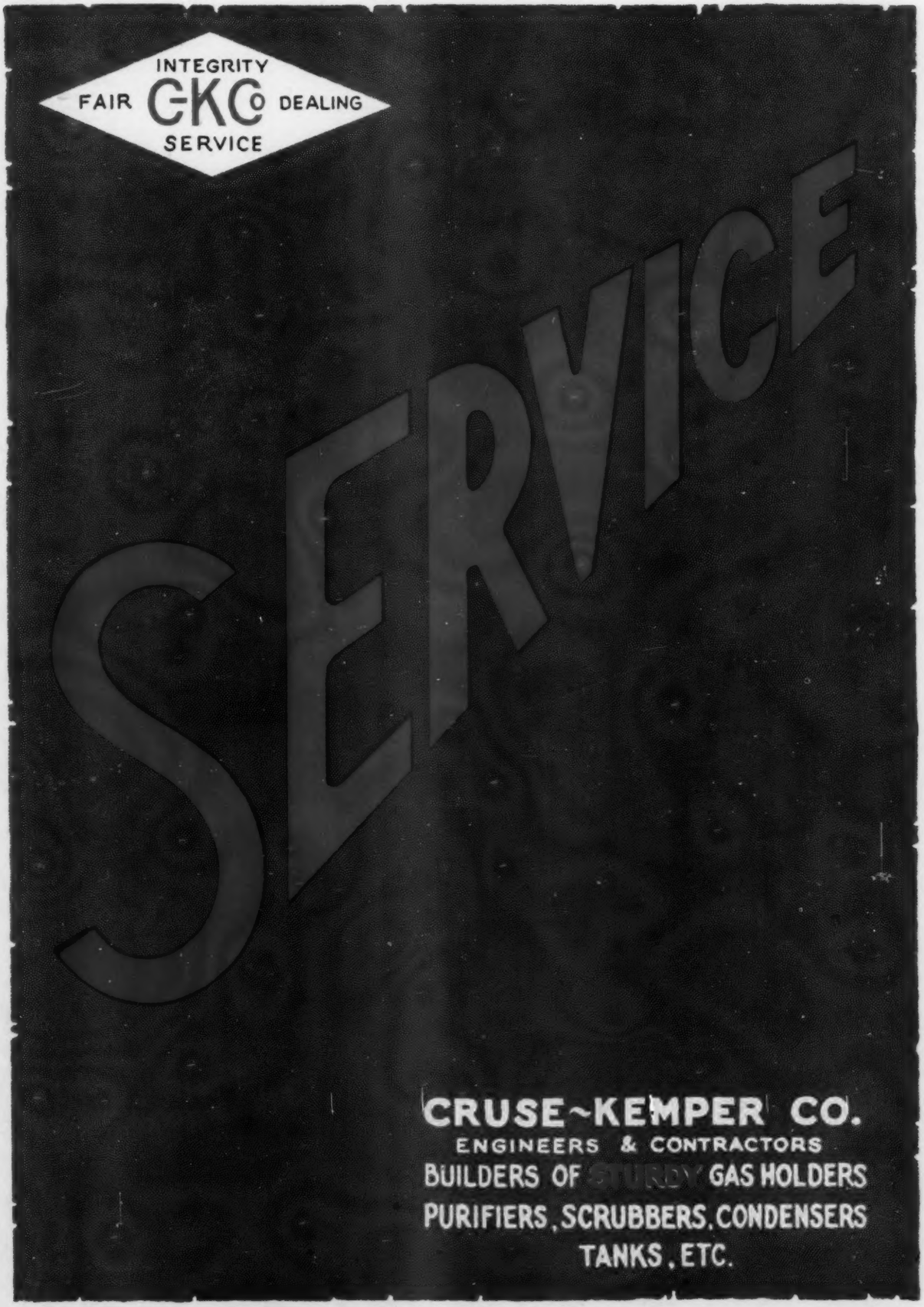
"Boldness in Business is the First, Second and Third Thing."—OLD PROVERB

The April 21st Issue of The Saturday Evening Post will contain a Two-page, Two-color Advertisement of Red Wheel Gas Ranges—Circulation, this issue, 3,000,000 copies.

Pictorial Review, Good Housekeeping, Collier's, Liberty and McCall's will also carry Full-page, Two-color Red Wheel Ads during April.

AMERICAN STOVE COMPANY, *801 Chouteau Avenue*, St. Louis, Mo.
LARGEST MAKERS OF GAS RANGES IN THE WORLD
These are the Six Famous Brands of Red Wheel Gas Ranges:
DANGLER · CLARK JEWEL · QUICK MEAL · DIRECT ACTION · NEW PROCESS · RELIABLE

LORAIN


INTEGRITY
FAIR C-K-C DEALING
SERVICE
SERVICE
CRUSE~KEMPER CO.
ENGINEERS & CONTRACTORS
BUILDERS OF STURDY GAS HOLDERS
PURIFIERS, SCRUBBERS, CONDENSERS
TANKS, ETC.

Announcing–

A Humphrey Advertising Campaign *in American Builder*

Here is another big audience for Radiantfires! 90,000 readers of the American Builder are to be given all the latest facts of Humphrey value and service. They are already familiar with Humphrey engineering and what it means to Home Heating, but these new messages, in their own publication, will hammer it home with new force.

Developing More Prospects

The circulation of American Builder (90,000!) is composed of contractors, architects, manufacturers of supply materials, engineers, construction men and carpenters. Here is an army of direct prospects, many of whom are in your neighborhood.

New finishes—new models—are sure to appeal to these men right now. They are called upon to supply the big demand for colorful effects in all home decoration.

Send for full information on this year's Sales Helps which will enable you to cash in on our national advertising. Write *now* and be ready!

The
HUMPHREY
Radiantfire

TRADE MARK REG. U.S. PAT. OFF.

No smoke—No odor
No ashes—No dust

If it isn't a Humphrey it isn't a Radiantfire.

GENERAL GAS LIGHT COMPANY, KALAMAZOO, MICH.
New York · 44 West Broadway San Francisco · 135 Bluxome Street

WHAT ABOUT THE BLUE STAR?

We have heard a lot of talk about what dealers will do with "cheap lines" bearing the Blue Star, and we have heard a lot of talk regarding how some salesmen were taking advantage of the Blue Star to sell dealers "lines that are not nationally advertised and that you would not sell anyone;" but just what it is all about no one can tell us. All agree when questioned closely that the Blue Star movement is a move in the right direction for the industry. Good Housekeeping's seal of approval, the Priscilla Proving Plant, and a number of other plans that have to do with bettering staple and special merchandise and service were not *sold* to the housewife in a week, a month or a year. Yet we know the value and dependence she puts on such plans today. We must admit that they have been beneficial to her from the start and that they have brought about a higher standard of products for use in her home. Education and a lot of it put over these ideas, and that is just what it will take to make the Blue Star plan a success generally.

EFFICIENT
SAFE
DURABLE
A Guide to Satisfaction
Illinois Power and Light Corporation
Like the STERLING MARK
... The Blue Star mark goes on only those gas appliances that have met rigid standards.
Illinois Power and Light Corporation
On the Honor List
Illinois Power and Light Corporation
O. K.'d
When you buy a gas appliance carrying the Blue Star Seal you know that appliance has been O.K.'d by experts.
Illinois Power and Light Corporation
The Blue Star
Gas appliances carrying the Blue Star Seal have been scientifically tested.
Illinois Power and Light Corporation
Tested ··· Approved
Illinois Power and Light Corporation

We feel that it is up to the gas companies as well as the manufacturers to educate the public to look for the Blue Star on gas appliances. Here in the heart of "the stove belt" we know that competition is as keen as it is in any section of the country. We know that there are fifty-seven varieties of honest-to-goodness orphan ranges offered the public every day and that there will be, until such time as we bring to the attention of every man, woman and child, not once but every time we talk about appliances, the fact that they should always make sure that the gas appliance they buy bears the Blue Star seal of approval of the American Gas Association. This seal is their and our protection. It means that the appliances carrying it are safe, efficient and durable. If all interested work together we will not be long in putting over our story and manufacturers who now produce inferior articles will not be long in getting on the band wagon. The Illinois Power and Light Corporation, the Laclede Gas Light Company and the St. Louis County Gas Company, all the companies in the 49th State, are behind the Blue Star and are using paid advertising to exploit it.

INSIDE INFORMATION

The one job the kin-to-the-boss can get without knowing anything about it is selling. That may be the reason for the assistant to the assistant's assistant in charge of sales, and so little salesmanship in some outfits.

It's All in the State of Mind

If you think you are beaten, you are;
  If you think you dare not, you don't;
If you think you'd like to win, but you can't,
  It's almost a "cinch" you won't;
If you think you'll lose, you've lost,
  For out in the world you'll find
Success begins with a fellow's will—
  It's all in the state of mind.

Full many a race is lost
  Ere even a race is run,
And many a coward fails
  Ere even his work's begun.
Think big, and your deeds will grow,
  Think small and you fall behind,
Think that you can, and you will;
  It's all in the state of mind.

If you think you are outclassed, you are;
  You've got to think high to rise;
You've got to be sure of yourself before
  You can ever win a prize.
Life's battle doesn't always go
  To the stronger or faster man;
But sooner or later, the man who wins
  Is the fellow who thinks he can.

—Author Unknown.

TO ALL SALESMEN

"Knowledge is of two kinds; we know a subject ourselves or we know where we can find information upon it."—Johnson.

One of the first things a salesman should do is to gain a complete knowledge about the merchandise he expects to sell, for unless he has a knowledge of his "groceries" he cannot hope to tell a prospect about them, in a manner that will cause him to want them.

Knowledge is enlightenment—we distrust the things we do not understand.

In selling home labor-saving appliances your success depends upon a knowledge of the commodity, gas, and the appliances that utilize it. If you do not have this knowledge you may be a mediocre success. But, if we thought for a moment your ambition rested there, we would not be working with you and suggesting a way to gain more knowledge about the commodity, appliances and merchandising.

Now, don't get us wrong, fellows; we don't know it all. Quite to the contrary. Each day we learn how little we do know, and how much more we have before us—but we do know how to find out. One way is to "read the book," another is to ask questions. If you do not understand the purpose, principle, mechanism, material, whys and wherefores of any phase of the utility business put your question to someone of your co-workers who you feel does know. If he does not give you a comprehensive, satisfactory answer, ask someone else, and keep on asking until you have the information you desire. If you have a doubt in your mind about an appliance read the manufacturer's story, and if that does not enlighten you, ask questions—if we don't know we will find out. When we do we will all be better salesmen—that's the big idea.

Fellows, our thought is this: If we learn about these inanimate things we are selling—if we seek and gain knowledge about these things that make home keeping hearts happier, and the world a cleaner, better, brighter place to live in, somewhere down the line in our process of self-enlightenment enthusiasm will enter and we'll make that old sales record "step-up," for, as Emerson has so well put it, "nothing great was ever achieved without enthusiasm." Hurrah for R. W.!

Yours toseewhatswhat,

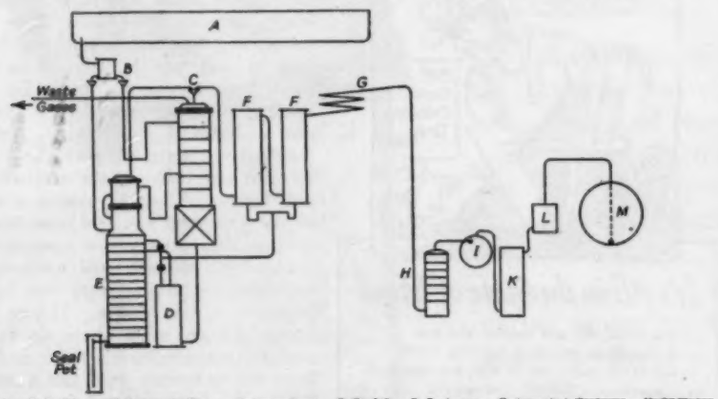
SALES MANAGER.

Technical and General MISCELLANY for The Busy Gas Man

MAKING PURE AMMONIA LIQUOR IN THE GAS WORKS

The quantity of ammonia liquor that is obtained during the distillation of coal in retorts depends on several factors, such as the throughput of coal, the percentage of steam admitted to the retorts and the temperature of carbonization, etc. The problems that are involved in the manufacture of pure ammonia liquor are rather many. Amongst them might be mentioned desulphurization or dissociation of sulphuretted hydrogen, decarbonization or dissociation of carbon dioxide, dissociation of other impurities, such as pyridine, distillation of ammonia, condensation or cooling of the mixture of steam and ammonia to produce a dry ammonia gas, purification of ammonia gases, absorption of purified ammonia gases by water disposal of effluent liquor and effluent gases and finally conservation and abstraction of heat.

A description of a plant in which these processes are carried out is given in the original article, which also contains a detailed discussion of the process of manufacture. The general outline of the plant is shown in the accompanying illustration. The article is a very valuable one in that it contains considerable information on temperatures, composition of liquor and accurate details of working the plant. It was written by J. W. Boyle, and appeared in The Gas World, 1927, pages 595-9.



A. Feed Tank. B. Ear Filter. C. Distributing Tower. D. Limited Vessel. E. The Still. F. Condensers. G. Atmospheric Condenser. H. Oil Washer. I. Caustic Soda Washer. K. Charcoal Tower. L. Vessel for 'Mi' Ammonia. M. Absorption Tank.

WASTE HEAT BOILERS

The economies that are gained in the use of waste heat boilers are described and the boilers that are used for this purpose are classified as horizontal return tubular, and horizontal or vertical water tube. It is stated that the settings of these boilers should be made heavier and more substantial than in the ordinary steam boilers. The fan is an essential factor in the design and construction of the waste heat boiler. Many an installation, which would have otherwise been good, has been spoiled by a faulty designed fan or by providing the fan with insufficient driving power to operate the apparatus at the proper efficiency.

The loss of heat, figured in B.t.u, and due to radiation from the walls of the boiler can be determined by means of the following formula:

$$\text{B.t.u. loss} = (T - t) \times \frac{1}{\frac{FB}{R} + \frac{CB}{R} + \frac{IB}{R}}$$

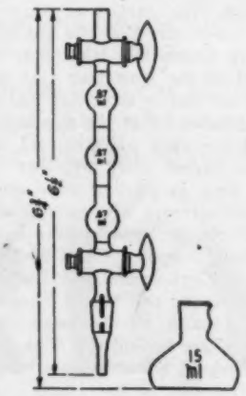
In this formula T is the internal boiler temperature, t the room temperature, FB the thickness of the firebrick, CB the thickness of the common brick, IB the thickness of the insulating brick which are used in constructing the boiler, and R is the loss of heat in B.t.u. per inch of thickness of the various brick. J. B. Crane, Combustion, November, 1927, pages 303ff.

ELECTROLYTIC CORROSION OF GAS MAINS

The presence of lead peroxide is definite evidence of electrolytic corrosion of a lead pipe, but its absence does not prove the absence of electrolytic action. Stray currents from electric light distribution lines and the like are normally not serious, but this is not true of the lines that feed electrical street car railways. Induced current may also occur, the system of mains constituting a secondary coil, one of its sides often being parallel to the rails, which constitute the inducing oil. Paints and dressings do not generally afford protection against electrolysis, the chief difficulty being their power of absorbing moisture. Other methods of protection, for example, insulating joints, baffle plates, lowering the potential of the mains, electric drainage of mains, are costly and of doubtful value. A. Bolzinger, Gas Journal, volume 189, pages 499-501; 551-3; 628-629, 754-756.

MODIFIED WEIGHING PIPET

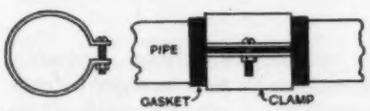
In analytical work it is often desirable to carry out the analyses on a nearly constant quantity of material, and in the case of corrosive liquids or other liquids which cannot be readily measured in ordinary volumetric apparatus this procedure may be inconvenient. A modified Lunge weighing pipet has been devised to get around this difficulty The pipet is shown in the accompanying illustration. The apparatus consists essentially of a Lunge pipet containing three bulbs of definite volume with graduation marks between them. The base is flattened and is of such dimensions that the pipet will stand comfortably on the ordinary balance pan. Dupli-



cate or triplicate weighings of nearly the same quantity of material can be carried out with the aid of this pipet. The apparatus may also be made with two bulbs instead of three and the dimensions of the bulbs may be changed to suit individual needs. G. Edgar, Industrial and Engineering Chemistry, 1928, page 158.

STOPPING PIPE LEAKS

The leaky pipe is a source of trouble and expense wherever it occurs. It is not the cost of making the repair that is of moment, but rather the time that is lost due to the shutdown of the apparatus in which the repair is being made. It is for this reason that temporary repairs are often not only justified but advisable.



The illustration shows a method of making a quick and temporary repair to a pipe line which would have to be removed in its entirety or in sections in order to make a permanent repair. A clamp two to three inches wide is made from iron sheet or strip. One-sixteenth inch thickness is ample for most purposes. A piece of asbestos sheet is then wrapped around the pipe at the leaky joint. The asbestos sheet is a special preparation made for this purpose by asbestos product manufacturers. The imperviousness of the sheet stops the leak when the clamps are tightened sufficiently to keep the liquid within the pipe.—The Power Specialist, February, 1928, page 9.

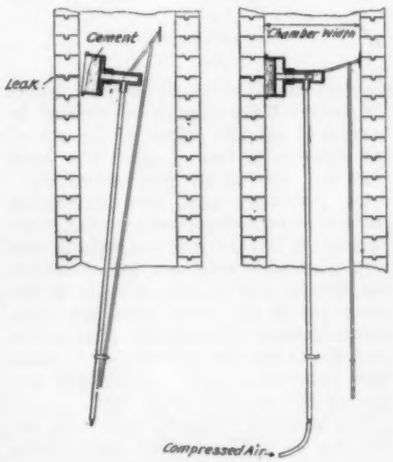
WOOD WASTE INSULATION

Wood waste from sawmills and the like is subjected to the action of saturated steam at high temperature and pressure with the result that the wood is exploded and a wood pulp is obtained which is a mixture of long fibers encrusted with the original wood lignins. This product is then compressed into insulating board which is claimed to have many advantageous properties. The principles on which this process is based will be found fully described by W. H. Mason, the inventor of the process, in Engineers and Engineering, January, 1928, pages 5 to 8.

The insulating board is made under considerable pressure in presses that are operated by three hydraulic rams 50 inches in diameter. The boards are said to be very dense, stiff and hard. The tensile strength is from 4,000 to 5,000 pounds per square inch. It also appears to have good insulating properties.

REPAIRING CHAMBER WALLS DURING OPERATION

Cracks and fissures often occur in chamber walls and these have to be repaired. Some fissures may be filled up in the usual manner by using a brush and a tarry mixture, as is common in repairing the walls of horizontal and vertical retorts. On the other hand, the conditions surrounding the making of such repairs in high chambers, such as those as high as 30 feet, make such repairs impossible, unless a special method and device be used. It is, of course, absolutely necessary that the leaky joint be repaired for the infiltration of air into the apparatus and its admixture with the produced gas is highly detrimental.



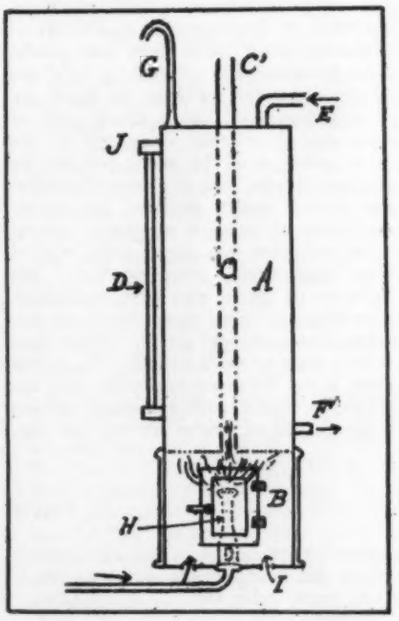
The illustrations show the method and apparatus used for this purpose. The joint-filling device consists of a box which is open on one side and which carries a connection for a tube or pipe on the opposite closed side. A piston acts as a tamping device in this box and the compressed air which is used for actuating this piston is supplied through the tubing. The illustration shows how it is possible to fix the box opposite the point where the repair is to be made. This anchoring device is controlled by the operator by means of a long rod, which is conveniently located and when out of use is clamped to the compressed air piping. The operation of filling the crack is quite simple. The compressed air forces the cementing mixture, which is contained in the box, into the joint and fills it completely, so that a real repair job is done. The pressure exerted on the piston amounts to from one to three atmospheres. The fact that the compressed air forces the cementing mixture into the joint which is filled, completely closes up this joint in a way that can scarcely be hoped to be duplicated by the use of a brush or the like. Dr. H. Deringer, Monats Bulletin Schweizer Verein von Gas und Wasserfachmaennern, 1928, pages 3 to 4.

STANDARDIZING REFRIGERATION INSULATION

Efforts are being made to effect some sort of standardization in the construction of refrigerators that are used for domestic purposes. This work is being undertaken under the auspices of the American Engineering Standards Committee in cooperation with the American Home Economics Association and the American Institute of Architects. It is pointed out that variation in the design and construction of the refrigerators has important economic effects. Thus, for example, an extra inch of efficient insulation in a refrigerator will pay dividends at the rate of eighteen per cent on a box used only six months out of a year. The connection between this matter and public health has also been pointed out.

A FORM OF WATER HEATER

The water heater is shown in the accompanying illustration. The casing A is made from sheet metal welded together.



The burner chamber B is about nine to ten inches high. The central tube C serves for the removal of the gases of combustion, while C' is the connection that leads to the chimney. The water gauge is shown at D. The cold water enters at E and the hot water is removed at F. G is an air vent to avoid accidents due to high pressure. The burner is located at H. It is claimed that good results were obtained with this apparatus. Les Gaz et l' Electricite, 1928, pages 148-9.

SAVING HEAT IN SKY-SCRAPERS

A very thorough study was made of the conditions that control the ventilation and the heating of a large office building. Particular attention was given to the leakage of air through the windows in the building, which is of the best modern construction. The effectiveness of weather stripping in reducing the infiltration of cold air in this manner was determined by actual experimentation. The various apparatus used in making the tests are described as well as the details of the methods employed, and the results obtained are analyzed. Some of the results obtained are given below in tabulation form.

The infiltration loss was reduced by ten per cent when the windows were locked. The infiltration loss is reduced by an additional 56 per cent by the use of weather-stripping. F. C. Houghton and M. E. O'Connell, Domestic Engineering, Dec. 3, 1927, pages 23 ff.

Infiltration of Air Through Metallic Windows

	Non-weatherstripped window, locked			Non-weatherstripped window, unlocked			Weatherstripped window, unlocked		
Wind velocity in miles per hour.	Leakage in cu. ft. per hour.	Heat loss in B.t.u. 0 to 70 deg. F.	Square feet radiation	Leakage in cu. ft. per hour.	Heat loss in B.t.u. 0 to 70 deg. F.	Square feet radiation.	Leakage in cu. ft. per hour.	Heat loss in B.t.u. o to 70 deg. F.	Square feet radiation.
5	660	832	3.5	660	832	3.5	210	265	1.1
10	1470	1852	7.7	1530	1928	8.0	600	756	3.2
15	2280	2872	12.0	2400	3025	12.6	1020	1285	5.4
20	3120	3932	16.4	3360	4235	17.7	1488	1875	7.8
25	4050	5105	21.3	4440	5595	23.3	1950	2485	10.2
30	4980	6275	26.2	5520	6960	29.0	2460	3100	12.9
35	6060	7640	31.8	6870	8660	36.1	3060	3858	16.1

BLUE AND CARBURETTED WATER GAS IN CONTINUOUS VERTICAL RETORTS

A number of experiments were carried out on a continuous vertical retort installation to determine the possibilities of producing water gas in them from graded coke and steam and of cracking light tars in the retorts for enriching the water gas. It was determined that a steady yield of blue gas of calorific value 285 to 290 B.t.u. gross could be easily obtained by steaming graded coke in a normal continuous vertical retort, provided the correct conditions of quantity of steam, rate of coke extraction, quality of coke, size of coke, temperature, exhauster "pull," gas tightness of retort, etc., were maintained. The influences of all these factors are discussed in the original article. When these factors were properly adjusted, the results given in the following tabulation were obtained, in retorts with a nominal carbonizing capacity of five to six tons per day.

	Hourly
Steam in pounds.....	190
Coke extracted, pounds.....	126
Gas made, cubic feet.....	4,600
Thermal yield	13.3

A thermal efficiency test was made over a period of 120 hours and gave a result in which 58 per cent of the total heat in the coke consumed in retorts plus gross coke to producers appeared as potential heat in the blue water gas, and showed that the waste gases could generate more than sufficient steam to be self-supporting (assuming a waste heat boiler efficiency of 60 per cent).

The cracking of gas oil and the production of carburetted water gas was found to be a feasible proposition. Carburetted water gases of calorific values 375 to 447 B.t.u. gross were obtained by using 0.97 and 1.86 gallons of the gas oil per 1,000 cubic feet of gas. The inerts were 13.1 and 13.7 per cent respectively.

On the other hand, the cracking of tar proved very disappointing and impracticable. A lengthy series of tests showed very poor enrichment and led to nothing but trouble with blockages either in the retorts or in the water seals, tar mains and condensers. Carburetted water gas of calorific values 361 to 387 B.t.u. gross were obtained by using 1.73 to three gallons of tar per 1,000 cubic fleet.

The steaming made the coke very friable and in addition to the concentration of ash it yielded a high percentage of material below 7/16 inch screen, up to a maximum of 33 per cent.

Examination of the refractory lining of the vertical retorts showed that there was no greater wear on them than when the retort was not used for making water gas. T. F. F. Rhead, Gas Journal of London, 1928, pages 59-65.

Per inch of major axis	Per longitudinal strip of retort surface (25 feet by one-inch mean width)
3	....
2	....
73	36.5
0.21	0.105

NEW PIPE JOINT

A new pipe joint is described which enables the pipe-fitter to bend the pipe in various directions at the joint. Thus the amount of deflection in a straight pipe at the joint can be as much as five degrees. This effect is secured by using a rubber gasket or ring in the joint. The joint itself consists of two housings of malleable iron, each housing forming the half of a circle around the pipe. Two bolts, two nuts and the special rubber composition ring complete the parts necessary for making the joint. A groove is cut around the end of the pipe a short distance from the edge. The depth of the groove is a little less than the depth of the threads on the end of the pipe. The rubber ring fits into this groove and makes a tight joint, which is maintained in this state even when the pipe is appreciably bent at the joint. For additional details see Domestic Engineering, January 28, 1928, page 73.

ACETYLENE AND CITY GAS FOR WELDING PURPOSES

A detailed study was made of the advantages and disadvantages of the two fuels for welding purposes. This study included the determination of the conditions of combustion, the flame temperature of the gas, etc. Various gases were tested, such as retort coal gas, coke oven gas, blue water gas and carburetted water gas as well as acetylene gas. Oxygen consumption figures were obtained. The results showed that the preheating period, when city gas was used, took from two to three times as long as when acetylene was employed. The conclusion is reached from these experiments that acetylene is superior to city gas for cutting dirty or oxidized metal. When clean metallic surfaces are cut it has been found that city gas will compare very well with acetylene gas under certain conditions as far as the actual results are concerned. J. K. Mabbs, Acetylene Journal, 1928, pages 275-8.

Association Activities

A. G. A. and affiliated gas associations' sectional activities and convention calendar

CONVENTION CALENDAR

April

4-5 Eastern States Gas Conference, Newark, N. J. J. Calhoun Smith, Consumers Gas Co., Reading, Pa., secretary and treasurer.

10-11 Pennsylvania Gas Association. Annual meeting, York, Pa. Geo. L. Cullen, Harrisburg, secretary.

12-13 Women's Section, Empire State Gas & Electric Association. Annual meeting, Briarcliff Lodge, Briarcliff Manor, N. Y. C. H. B. Chapin, Grand Central Terminal, New York, N. Y., secretary.

12-13 Distribution Conference of Technical Section, A. G. A., Chicago, Ill., Stevens Hotel.

13 New England Gas Association, Manufacturers Division, Statler, Boston, 12:30 P. M. Industrial Division, Boston Consolidated Gas Company, 2:30 P. M. Sales Division, Boston Chamber of Commerce Building, 6:30 P. M.

17-19 Southern Gas Association. Annual meeting, Jacksonville, Fla. J. P. Connolly, 141 Meeting Street, Charleston, S. C., secretary.

18-20 Midwest Gas Association. Annual meeting, Cornhusker Hotel, Lincoln, Neb. A. W. Schmidt, Des Moines Gas Co., Des Moines, Iowa, secretary.

19-20 Gas Section, Empire State Gas & Electric Association. Annual meeting, Briarcliff Lodge, Briarcliff Manor, N. Y.

May

2-5 Southwestern Public Service Association. Annual meeting, Dallas, Texas. E. N. Willis, 403 Slaughter Building, Dallas, Tex., secretary.

6-11 Natural Gas Department, American Gas Association. Annual meeting, Texas State Fair Grounds, Dallas, Texas.

10-11 Accounting Section, Empire State Gas & Electric Association. Annual meeting, Briarcliff Lodge, Briarcliff Manor, N. Y.

June

21-22 Canadian Gas Association. Annual meeting, Hamilton, Ont. G. W. Allen, 7 Astley Avenue, Toronto, secretary.

ILLINOIS GAS ASSOCIATION HOLDS FINE CONVENTION AT SPRINGFIELD

THE twenty-fourth annual convention of the Illinois Gas Association was quite up to its usual high standard. The attendance was well beyond seven hundred and keen enthusiasm was displayed over the various papers.

Colonel Oscar Fogg, of the American Gas Association, addressed the opening general session of the three State associations. The Illinois State Electric Association, the Illinois Electric Railways Association, and the Illinois Gas Association. The "keynote" of his address was the value and need for cooperation among the various branches of public utility services. He stressed the point that the ultimate in service is reached only by rendering that type of service that is to the ultimate economic benefit of the public. The colonel quoted many well known authorities on this subject, including Mr. Samuel Insull and Mr. George B. Cortelyou. The most significant of these quotations is the one ascribed to Mr. Insull, which says, "Each (utility) may do the work each can do best."

P. O. Warren, President Illinois Gas Association

Mr. C. H. Light, of the Peoples Gas Light & Coke Company, opened the first meeting of the gas section. He pointed out all of the current objections to gas refrigeration, and then promptly refuted each objection in a very logical manner, leaving little doubt as to whether or not the gas business can have the refrigeration business if they really want it.

Mr. Light's paper was followed by Mr. H. T. East's on "Gas or Service." Mr. East is assistant to the vice-president of the Public Service Company of Northern Illinois, Chicago.

Service Questionnaire

The outstanding feature of his paper was the "Service Questionnaire" which is supposed to be answered at regular interval by every public utility employee in the country. There are thirty-five questions in all, and the answer to each, excepting the last one, should be "yes." The final question is quoted verbatim. "No. 35—Are you satisfied with the service rendered?" To score a perfect mark the answer should be "no." This was the "gist" of the whole paper. The moment a public utility servant IS satisfied with the service rendered, trouble begins.

East's paper was discussed by Messrs. P. C. McDonald and S. H. Hill of the Peoples Gas, and Mr. R. B. McDonald of the Peoples Power Company, Moline. Mr. Hill suggested that the answer to the first question in the questionnaire should also be "no" instead of "yes." We also quote the first question. "Do you try to operate as though you did not enjoy a monopoly?"

Mr. A. B. Greenleaf, of the Peoples Gas Light & Coke Company, presented a sixteen-page report of the activities of the Illinois Gas Association in cooperating with the University of Illinois, which proved to be very interesting, due to the comprehensive manner in which the work of the committee was reviewed. Mr. Greenleaf orally stated that the most alarming situation is the demand by mid-west gas companies for short courses dealing with house-heating problems rather than for industrial work. He pointed out that the industrial training must not be neglected and that unless all gas companies take on

a goodly sized industrial load the house-heating will not be as profitable as imagined.

Mr. Greenleaf has been chairman of the educational committee for three years and now steps out of that position to make way for the newly appointed chairman, Mr. E. E. Lungren, of the Western United Gas & Electric Company of Aurora, Ill.

The afternoon session was closed by a fine paper read by Mr. L. A. Kirch, gas engineer of the Midland Utilities Company. The speaker deserves a great deal of praise for his audacity in presenting the solution to a hypothecated problem. He outlined a problem in gas distribution wherein it was problematical as to whether long distance transmission was more advisable than isolated manufacturing plants. The solution to the particular problem showed long distance transmission to be the most economical.

Lively Discussion

At the conclusion of his paper considerable discussion followed that had not been planned for. It is hard to remember any previous occasion where greater freedom in viewing personal opinions was evidenced as in this meeting concerning long distance transmission.

The joint utility gatherings were entertained by the Springfield Engineers' Club at a sumptuous banquet, at which time Colonel Sidney Story, of international fame, addressed the guests on the subject of "The American Merchant Marine. An Indispensable Arm of Naval Defense and National Prosperity."

The second general session, held Thursday morning, was presided over by Mr. B. J. Mullaney of Chicago.

Reporting on effects of nine years of public utility informational activity and appealing for a whole-hearted continuation of the work, Mr. Mullaney said:

The general public understands our industry far better than it did nine years ago. But, because the industry is relatively so new, and yet so large, so complex and so remote in its operating and economic details from the ken of the average citizen, we are still far from having it understood as older and simpler industries are understood.

Curiosity about us—questioning what we do and why we do it, to say nothing of criticism—is a natural product of the pervasive character of our services. One or more of them touches the life of nearly every urban dweller every day or several times a day, and always accompanied by the emphasis of a conscious act of the user—lighting the gas, using the telephone, turning on the electric light, or getting on a trolley car.

Except on a trolley car, the user of our service never sees what he buys and has only the vaguest conception of what it is or how he gets it. Make your own comparisons with other industries and businesses, and judge the psychological effect of the buyer seeing or not seeing what he buys.

As the industry grows in visible size and financial importance, it becomes more of a target for those who are against everything that is large, important or successful.

But, on the other hand, no industry on earth has more abundant material for making itself understood by those citizens (still an overwhelming majority in this country, I believe) who look before they leap, think before they act, and do not assume that everybody having $2.50 is therefore automatically guilty of theft, mayhem and treason. To those citizens we have an obligation to make ourselves understood and abundant material with which to do it.

At the beginning of this informational work nine years ago, the purpose of it was correctly announced to be. "To make the public better acquainted with the fundamental economic facts of the public utility industry." That announcement expressed recognition of a very real need which had been uncovered by war-time and post-war conditions.

All branches of the public utility industry were being hurt and some branches were being literally strangled by mounting costs, stationary rates and impaired credit. Consequently, the "fundamental economic facts" we were thinking of mostly were the facts which were peculiar to our industry as distinguished from other industries—fixed selling prices, new capital requirements, ratio of capital investment to turnover, regulation, and so on—and which are the same fundamental economic facts which apply and need understanding today.

Secrecy and Suspicion Twins

For the future, it is the same old but ever new story, as I see it, so that the Secrecy-and-Suspicion twins may be eliminated, and nobody need be ignorant of exactly what the industry is, how it operates, and why it has to operate as it does.

The other speakers of the Thursday morning meeting included Mr. George R. Jones, of the Public Service Company of Northern Illinois. Mrs. Marc J. Fowler, Mr. Jay G. Mitchell, Charles N. Wheeler, Mr. F. S. Armstrong and Mr. E. R. Dillavou.

At the second strictly gas meeting the following papers were read.

"Rates," Mr. F. A. Newton, Hodenpyl, Hardy & Company.

"Economic and Engineering Survey of the Gas Industry," Mr. W. C. Beckjord, American Light & Traction Co.

"A Workable Plan for Industrial Sales Promotion in Small Cities," Mr. E. H. Ronsick, Illinois Power & Light Corp.

All three papers proved to be very interesting, as was evidenced by the large number of people that remained to the conclusion of the sessions. Some very fine discussion followed each paper and it was agreed Mr. Beckjord's paper was one of the most comprehensive resumes ever attempted.

Although sales seem to be the keynote of the gas section's meetings there is no doubt but what Mr. Kirch's paper on long distance transmission was the most outstanding contribution to this year's convention. Mr. John G. Learned's discussion of Mr. Kirch's paper was based on the sales aspect of long distance transmission. Mr. Learned pointed out the tremendous growth of the gas business and stated that the most conservative estimate of the future indicated an increase of 100 per cent within the next ten years. "This fact," he said, "meant that the engineering department must be fully alive at all times to their expansion program."

The following officers were elected to office for the ensuing year: President, J. A. Strawn, Peoria, Ill.; vice-president, E. E. Lungren, Aurora, Ill.; secretary-treasurer, R. V. Prather, Springfield, Ill.; board of directors, P. D. Warren, Chicago, vice E. E. Lungren; D. M. Workman, Chicago, vice R. S. Wallace; R. B. MacDonald, Moline, reelected.

LARGEST CONVENTION HELD BY OKLAHOMA UTILITIES ASSOCIATION

THE largest convention in the history of the Oklahoma Utilities Association was held at Tulsa, Okla., in the Mayo Hotel, March 14, 14 and 15. The registration was approximately 875 and included executives and employees of electric light and power, natural gas, telephone and electric railway companies, also of manufacturers and suppliers of electric, gas and telephone machinery and equipment.

The morning sessions were participated in by all of the delegates with the exception that the telephone division held separate meetings during most of the convention. The afternoons were devoted entirely to separate meetings of the different divisions of the association. One Wednesday afternoon six division meetings were in session simultaneously. The Gas division met during two afternoons and participated in all the general sessions.

In his annual report to the convention E. F. McKay, manager of the association, reviewed the accomplishments of the association during the past year. He presented facts and figures to prove that the revocable permit law, passed by the Oklahoma legislature in 1925, has been popular and successful. The year showed greater activity in the granting of natural gas franchises than any previous year, he said, 24 Oklahoma towns granting franchises, and most of these receiving service.

A. E. Higgins of New York, field representative of the American Gas Associa-

tion, talked on "The Blue Star Plan." He outlined changing conditions in the American home which have created new and difficult problems for the gas companies.

The "Blue Star Plan," launched a little over a year ago, is helping to solve these problems he said. The speaker stated that the plan seeks to accomplish three things, as follows:

1. To establish a new standard of gas service.

2. To identify that service with a symbol.

3. To popularize that symbol and the service which it identifies.

He stated that the plan is applicable to both old and new homes and he recommended that it be adopted by all companies as it can easily be made applicable to every community of any size.

L. W. Scherer, President-elect Oklahoma Utilities Association

In his paper on "Recent Progress in Gas Distribution," C. W. Robbins, of Ponca City, Okla., general gas superintendent, Oklahoma Northern Utilities Company, stated that in the field of gas measurement there has been further trend toward the use of positive meters in large sizes, either singly or in bank, for the measurement of gas to moderate sized industrials and commercials. The use of proportional meters, he advised, has about disappeared. He stated that aluminum paint is finding more supporters each year for painting meters. He mentioned the annual Southwestern Gas Meter Short Course at Norman, Okla., as one factor in progress of gas measurement, stating that 275 gas men from five different States attended last year.

The cooperative work being done between gas associations and the bureau of mines was presented in a paper by E. L. Rawlins, Bartlesville, Okla., United States Bureau of Mines. He stated that the bureau had been conducting experiments in conjunction with the gas associations looking toward greater conservation of natural resources, especially of oil and natural gas. The bureau had become especially interested, he declared, in problems involving the production, transmission and distribution of natural gas. The most important problems that have been studied, he said, include conservation of natural gas in the home, fundamental studies of the characteristics of natural gas, and the study of leakage and measurement problems in connection with transmission of natural gas at high pressure.

Officers of the association chosen for the ensuing year are: President, L. W. Scherer, Yale, president United Telephone Corporation; first vice-president, H. L. Montgomery, Bartlesville, manager gas division, the Empire Companies; second vice-president, T. H. Steffens, Sand Springs, president Sand Springs Railway Company; treasurer, W. R. Emerson, Oklahoma City, secretary-treasurer Oklahoma Gas and Electric Company; manager, E. F. McKay, Oklahoma City. Mr. Emerson and Mr. McKay succeed themselves.

Each division also elected one new member of the executive board. The Gas division elected R. W. Robbins, general gas superintendent, Oklahoma Northern Utilities Company, a member of the executive board, and R. W. Hendee, Tulsa, general field superintendent, Oklahoma Natural Gas Corporation, as chairman of the gas division.

Testing Laboratory Cornerstone Laid

THE cornerstone of the new $150,000 Testing Laboratory of the American Gas Association at Cleveland, Ohio, was laid with fitting ceremony on March 15. The event was witnessed by representatives of a number of gas appliance manufacturing companies in Cleveland, the laboratory testing and office staffs, officials of the American Gas Association, and others.

R. W. Gallagher, chairman of the managing committee of the laboratory, opened the ceremony with a brief talk outlining the steps previously taken to bring the laboratory to Cleveland and make it a permanent institution. He paid tribute to the manufacturer company members of the association who have been loyal supporters of the laboratory movement and have helped immeasurably to make it a success. Mr. Gallagher called upon Oscar H. Fogg, president of the American Gas Association, who responded as follows:

Remarks of Col. O. H. Fogg

"Less than three years ago the American Gas Association selected the City of Cleveland as the location for its laboratory for the testing and certification of gas using appliances.

"Several factors contributed to the choice, but none more decisively than the keen interest and helpful attitude of the late Martin B. Daley and his associate and friend, Ralph W. Gallagher. Through their generous cooperation a small beginning was made in the plant of the East Ohio Gas Company and from this has been evolved an institution now recog-

Prominent gas officials at laying of new Testing Laboratory cornerstone. "We are writing a new chapter in the history of the gas industry and we may be sure that if it reflects something of the idealistic nature of man, we are writing not for today but for posterity."—O. H. Fogg.

nized throughout the land for its efficiency, combined with fairness and integrity.

"It has been a constructive force in elevating the standards of quality and safety of the gas appliances used in the homes of America.

"This has been made possible by the hearty cooperation of all forces within the industry, the manufacturers as well as the gas companies, the invaluable help of agencies of the Federal government, the wise counsel and direction of Chairman Gallagher and his associates of the managing committee, and the devoted service of Mr. Conner, the director, and his efficient loyal and experienced staff.

"The time has come for a permanent establishment, with a still greater field of usefulness and we lay this cornerstone in the foundation of an institution dedicated to the service of the American people."

With trowel in hand Col. Fogg then spread the mortar upon the cornerstone, and the stone was lowered into position. A copper box enclosed in the stone contained, among other things, a copy of the 1924 report of the special committee, headed by Harry C. Abell, to investigate the feasibility of establishing a laboratory. Also enclosed was a list of officers of the association for the 1924-25 term, when the laboratory was established, and a list containing the personnel of the laboratory managing committee, general requirements committees, and the laboratory staff.

At the conclusion of the ceremony a luncheon was tendered at the historic Union Club by Mr. Gallagher. Brief addresses were made at the completion of the luncheon by Mr. Gallagher, Col. Fogg, E. P. Bailey, Jr., R. B. Harper and W. R. Hopkins, city manager, of Cleveland.

IOWA STATE COLLEGE ADVISES EFFICIENT STOVES

THE first equipment short course in America was held at Iowa State College, Ames, Iowa, in the spring of 1927. This short course gave instruction in electric equipment only, but it was well attended by women representing fifteen states.

This year, for the 1928 short course, the instruction was extended to include gas equipment for the home, as well as electrical equipment.

The purpose of the short course is, according to those in charge, to give technical and non-technical information which will be useful to women interested in the gas and electrical industries in their presentation of household equipment for use in the home.

"An ideal cooking device," as described by the Household Equipment Department at Iowa State College, "is one in which the fuel is consumed only when the cooking is in progress and one whose fuel can be cut off instantly." Gas as a fuel answers these requirements quite well, but unless the stove is efficient and the housewife knows how to operate it effectively, the efficiency of gas will be lowered.

Fifteen ways of saving fuel on a gas stove were suggested at the short course. The first of these, that of using a small burner instead of a large one, would not be practical if time were an important factor, but if there is no especial hurry it results in a saving of gas. If one wishes to simmer a foodstuff, the simmerer should be used, as it consumes less gas than a burner, even though the burner is turned low.

Gas should not be lighted until needed. If the flame is not to be used for a few minutes, turn it out and light the gas. "Matches are cheaper than gas."

Unless a burner is clean it cannot be operated efficiently. Neither can a burner which is out of adjustment or a worn-out burner be expected to give the best service.

If small amounts of several foods are being cooked at one time, duplicate or triplicate saucepans can be used over one burner. Often these come with detachable handles, so that they can be lifted easily from the stove. Of course, there is economy in heating only the amount of water needed, turning down the flame after the water begins to boil, and using covered saucepans.

"Oven meals" are becoming popular with many housewives. There is little difference between the cost of using the oven to capacity and using it for only one thing at a time, so these meals are really an economy. A thermostat or oven thermometer makes possible a better food product, because of the even temperature, as well as making the use of the oven more efficient. An oven, if used for storage, rusts out, and hence cannot be expected to give the best service.

Gas connections should be adjusted by one who knows how.

Some of the special features to look for in buying a gas stove, as brought out by the short course, are a thermostat, a pilot light, insulated oven, solid top, simmerer and lighter.

Special Committee on Holder Repair Practice

The executive board of the American Gas Association has created a special Committee to Prepare Recommendations as to Practice for the Conduct of Repair Work on Gas Holders, which is composed as follows:

J. B. Klumpp, vice-president, the United Gas Improvement Co., Philadelphia, Pa., and past president of the American Gas Association, chairman; H. W. Alrich, Consolidated Gas Company of New York, N. Y.; J. H. Braine, the Brooklyn Union Gas Co., Brooklyn, N. Y.; L. B. Eichengreen, the United Gas Improvement Co., Philadelphia, Pa.; Alfred Hurlburt, Equitable Gas Co., Pittsburgh, Pa.; A. I. Snyder, Detroit City Gas Co., Detroit, Mich., and W. G. Rudd, the Peoples Gas Light and Coke Co., Chicago, Ill.

Book Review

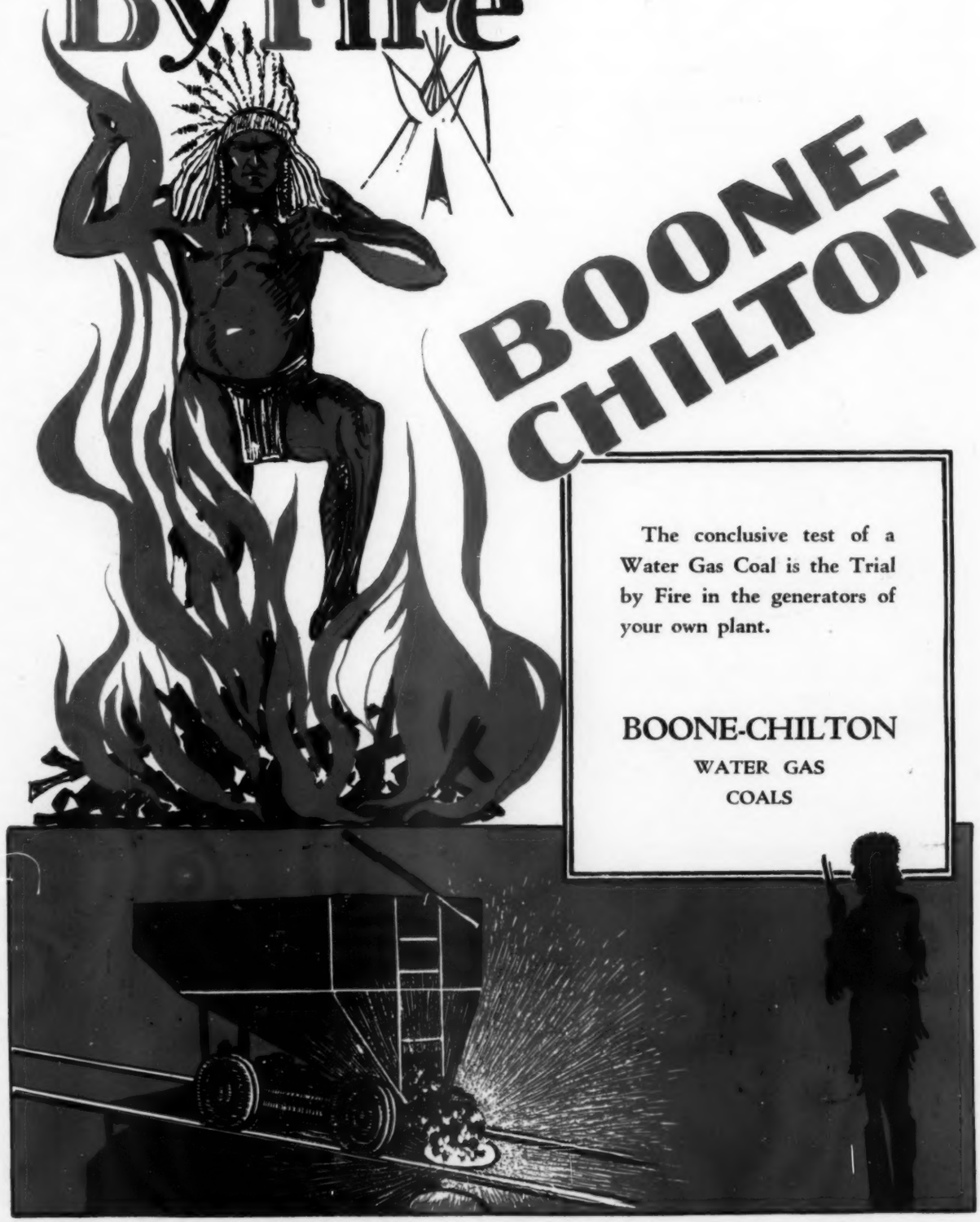
Kokerei und Gaswerksofen (Coke and Gas Works Ovens). By L. Litinsky.

This is the title of a valuable addition to the literature of gas, in which the author discusses the principles on which the various types of coke ovens and gas retort ovens are designed and operated. It is essentially a book on principles and not on details of operation. The first portion of the book describes the various types of coke ovens and retort ovens used at the present time and also certain of the auxiliary equipment that is used in the coke oven plant and the gas works up to the condenser. Thus the charging and discharging equipment of the gas works and coke oven plant, as far as the apparatus is used in operating the ovens, the methods and apparatus used for cooling the coke either by the wet or dry method, the waste heat boiler and its position in the economy of the gas and coke making process, etc., are discussed. An interesting chapter in this book tells about the basic principles on which the proper selection of a type of coke oven or gas retort oven should be made.

Some attention is paid to the mechanism of the distillation process and the reactions and changes that take place in it. The heat requirements of the coke oven distillation process and of the gas retort process as well receive special attention. Heat balances are developed. The fire-resistant materials used in the construction of the various ovens also receive consideration. Another interesting chapter is the one that deals with the manner in which the yield of a large scale distillation operation either of the coke oven or gas retort oven type can be determined from a laboratory experiment.

The book is well illustrated and has a good index. It has been written as one of a general series on Coal-Coke-Tar, published by W. Knapp, in Halle (saale), Germany, under the direction of Dr. L. Gwosdz.

"The Trial By Fire"



BOONE-CHILTON

The conclusive test of a Water Gas Coal is the Trial by Fire in the generators of your own plant.

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Tested in the fires of over a hundred and fifty plants, BOONE-CHILTON remains the leading coal for the manufacture of water gas—a leadership founded on 6 years of consistently satisfactory performance.

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Chicago

Equipment News

Thermal Expansion Goggle Valve

William M. Bailey Company, Magee Building, Pittsburgh, Pa., recently issued a bulletin describing their Thermal Expansion Goggle Valve, illustration of which is shown.

This valve is designed for use in all types of gas mains where it is necessary to close or open the main. They state that this type of valve has been used exceedingly in the gas main leading to blast furnaces and gas fired boilers. The valve is so designed that the tremendous force required for freeing or clamping the goggle plate is produced by a thermal expansion and contraction of the metal tubes for either steel or bronze, as required.

The valve is manufactured for either rivetted or flanged connection to the gas main. They are manufactured in sizes to fit gas mains from 12 inches up. An illustrated bulletin will be mailed on request.

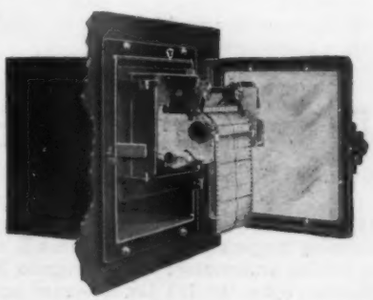
Flush Type Cases for Brown Continuous Chart Recorders

Where appearance is a feature, added attractiveness to instrument installations can be obtained by having the instruments supplied with special cases for flush mountings on switchboard or panels, the switchboard or panel being pierced to receive instrument cases.

The Brown Instrument Company has long supplied its pressure gauges, thermometers and more lately its flow meters in flush type circular cases. Now the company is also able to furnish the Brown Continuous Strip Chart Instruments in cases of the flush type.

A simple but important feature of the new Brown Flush Type Continuous Chart Recorder is an arrangement by which the recording mechanism can be drawn out of the case at the front for easy inspection, after which it can be pushed back into place, a locking device holding it firmly in position.

Brown Continuous Strip Chart Recording Pyrometers, CO_2 Meters, Tachometers and Resistance Thermometers can now be furnished in flush type cases with or without panels as specified.

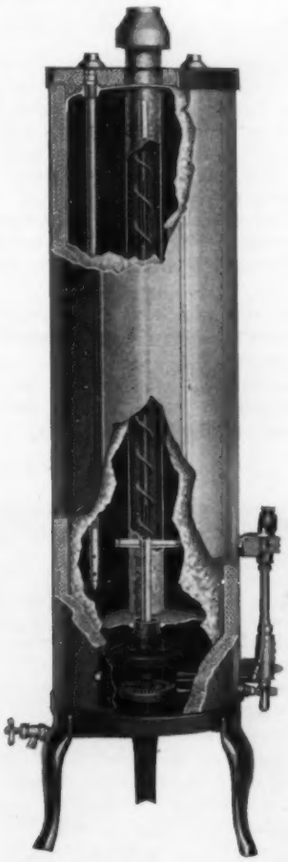


All of these instruments can be supplied in single, duplex, multiple or multiple duplex models capable of producing from one to twelve records on one chart.

New Gas Water Heater

The Gas and Electric Heater Company, LaPorte, Ind., has recently put on the market the Invincible Heater. The operation and claims for this appliance are as follows:

The incoming cold water flows directly to the heating element at the base of the



heater, and below thermo rod, so that it does not chill the reserve of hot water at the top, nor cause burner to be ignited for small draws of water. The heating element spreads the stream in a shallow sheet above the burner, and, as it is heated, it rises through the central tube and is discharged at the top of the storage tank. Temperature is automatically controlled, usually at 135 degrees F., although any desired temperature from 80 degrees F. to 190 degrees F. may be secured by adjusting the temperature control. When the set temperature is reached, a monel metal ball is seated on the valve (by lever action controlled by the expansion and contraction of a rod moving in a tube of copper alloy) completely closing it. Thus the flow of gas to the main burner is either completely shut off, or it is completely open at the maximum efficiency of the burner. The heater is equipped with a safety gas control which shuts off the gas to the main burner if the pilot light becomes extinguished or if there is a disturbance to the regular flow of gas in the main. The

tank is of heavy construction, galvanized inside and out, thoroughly insulated with asbestos alternated with inert air spaces. The metal outer jacket is galvanized inside, and the outside is beautifully enamelled in green.

New Range Cleaning Compound

Vit was perfected for removing certain very obstinate stains on white gas ranges. Many dealers used it for some time before it was put on the market. The chief constituent is a by-product from our enameling plant, but it is combined with other elements so that it takes care of practically all difficult stains without injury to the enamel. It contains no caustic or abrasive and is put up in two sizes of cans.

The sale of Vit is at present limited exclusively through outlets which handle gas ranges.

Complete information will be given by writing A-B Stove Company, the manufacturer, at Battle Creek, Mich.

New Japanning Oven Burner Eliminates Explosion Hazard

By this new system of recirculated, convected heat, oven air is distributed and circulated through slotted ducts, one connected to the exhaust side of a direct driven blower fan and another similar duct connected to the intake side of the fan through the burner.

It is claimed that ovens heated by this system offer an absolutely clean interior. There are no heating elements, radiators or projections inside the oven.

A natural draft outlet or stack is provided of a capacity in relation to the oven and the fan to develop a water gauge pressure within the oven of one-eighth inch to one-half inch, thus forcing equal temperature to all parts of the oven, as well as making impossible the formation of gas pockets or hot spots.

This heating system is adaptable to all types of japan and drying ovens, and to foundry core ovens.

It offers new economies in heating costs, first, because all air is brought into direct contact with the burner flame through the heater; second, because of the return of oven air to the heater at oven temperature, and, third, because ventilation volume has been reduced to an extreme minimum.

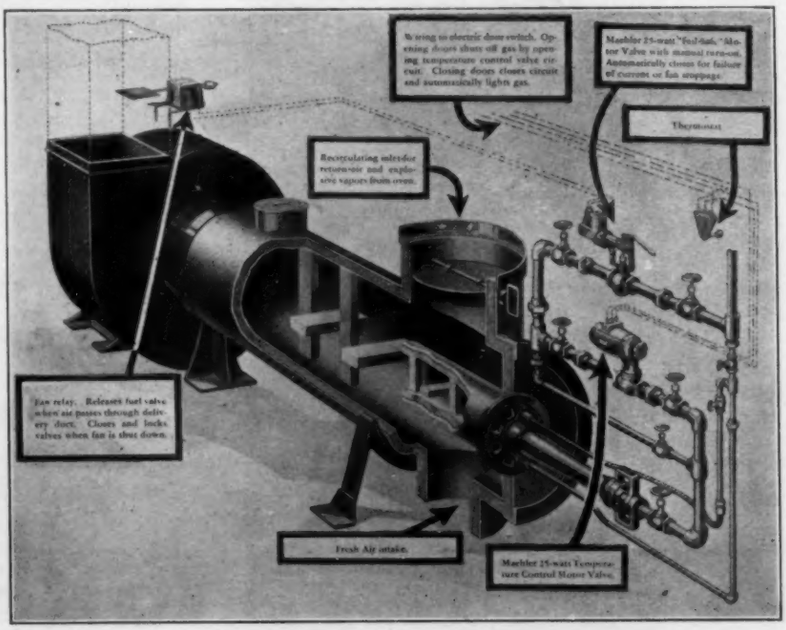
It is also claimed that automatic safe control of the entire burner and recirculating system is provided through the patented application of a series of electro-mechanical units designed to meet practically every contingency that can develop in the operation of the oven.

The new Maehler-Universal system of heating accomplishes what otherwise would have to be done by increased admission of fresh air or greatly increased ventilation volume, i. e., destroys by incineration the explosive, inflammable vapors of volatile thinners as rapidly as they are thrown off by the work in process, thereby constantly purifying the oven atmosphere. The atmosphere is clean and at its minimum stage has 15 per cent of oxygen, no monoxide, 4 per cent dioxide and 81 per cent nitrogen content.

No ventilation is required for fume removal. Such ventilation as is required (only 10 per cent of the total air volume) is used as a relief valve to admit fresh air to the mixture passing through the heater and oven.

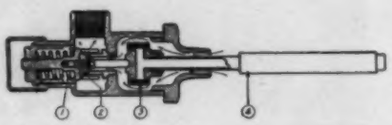
This Maehler-Universal Heating System gives promise of having solved the problem that has confronted insurance underwriters and manufacturers for years—providing japanning, enameling and drying ovens that are safe against fire and explosion, and fool-proof in operation.

Details will be sent upon application to the Paul Maehler Company, Chicago, Ill.



New Combination Temperature and Pressure Relief Valve

This valve is primarily designed for automatic storage heaters. However, it is also adaptable to many other uses. It is claimed to eliminate the possibility of the system filling with steam or building up excessive pressure.



Its operating range runs from an opening temperature of 200 degrees F. to a closing temperature of 185 degrees F. It also opens at 130 lbs. pressure and closes at 115 lbs. These limits can be varied as per specifications.

The valve disc is made of a composition disc, thereby making for a water tight seat.

The valve's operation is as follows: Pressure is exerted directly against the exposed portion of the valve seat (2). Excessive temperature causes the metal bellows (3) to expand. This also opens the valve as the end of the valve stem rests on the end of the bellows. (4) is a tube containing thermo liquid.

It is manufactured by Time-O-Stat Corporation, Milwaukee, Wis.

The Meter-Cop

This device, which is a self-contained combination of back pressure valve and diaphragm-actuated vacuum valve, is recommended for installation on meters to protect them against the bad effects of back pressure when the compressor is shut down. This back pressure will vary, in the case of industrial installations, from two to twenty pounds.

The Meter-Cop is claimed to operate positively and instantaneously the moment any back pressure or vacuum is

exerted against the gas meter. It is manufactured in pipe sizes from ¾-inch to 20 inches, inclusive. Up to 4 inches it has screw connections, while above this size, flanged connections. The diaphragms are of sheepskin, with B. C. fabric for protection and strength.

Full information will be sent upon inquiry to the manufacturers, Gas Industry Laboratories, Inc., 75 Second Avenue, Long Island City, New York.

The Improved Kemp Automatic Gas System

This apparatus, manufactured by the C. M. Kemp Mfg. Co., Baltimore, Md., is a proportional mixing machine, by which city gas, whether artificial or natural, and air are automatically mixed in predetermined ratio, in exact amount to meet the demand. The mixture, which is compressed to a pressure of from one to three pounds per square inch, supplies fuel for various industrial operations. The flame can be made reducing, oxidizing or neutral, no secondary air being needed.

Its operation is as follows:

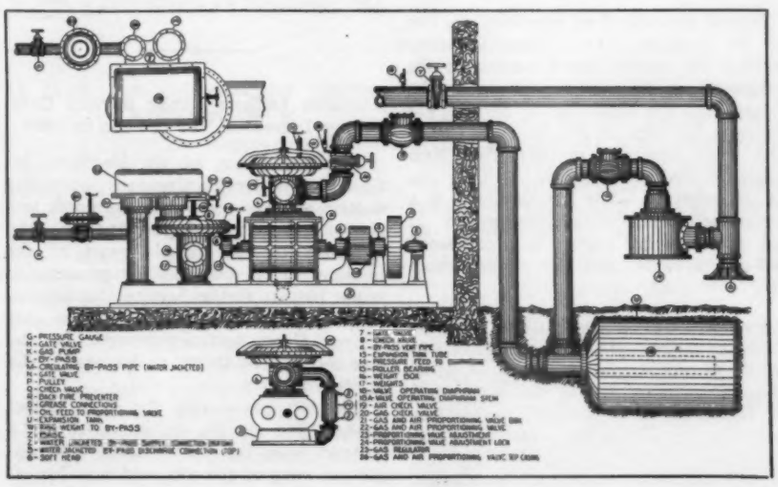
City gas flows through the pipe and valve H to pressure governor 25, which is set for the lowest pressure at which gas is likely to be supplied.

Air from the room or outside enters multiple disc check valve 19. The air and gas, under suction from pump K, are drawn through checks 20 and 19, and in unison, through the proportioning valves located under cover 22 through vertical stand pipe I, through a cored passage in base Z, to under or inlet side of pump K, the latter of the figure 8 impeller type. This pump operates at constant speed regardless of the volume of mixture used, but is of such capacity that it passes at all times more mixture than is needed, thus maintaining uniform pressure in the discharge pipe. Pressure control by-pass valve L permits the excess volume of gas-air mixture to return to inlet of pump K through water jacketed by-pass pipe M.

The delivery pressure is varied by changing the amount of weights W. From by-pass valve L the mixture is forced by the pump through gate valve N, check valve 8, into expansion tank U, check valve Q, back-fire preventer R, then through the delivery main and gate valve 7 to burners.

The proportioning valves will produce any desired ratio of air and gas from 15 to 1 to 2 to 1.

Savings in gas of from 25 to 75 per cent are claimed.



Sidewall Oven Thermometer

The Cooper Oven Thermometer Co., Pequabuck, Connecticut, recently issued two bulletins, one describing their new Sidewall Oven Thermometer, and the other the Cooper Heavy Duty Thermometer.

The Oven Thermometer is designed specially for gas ranges. It shows actual Fahrenheit degrees. Extreme heat cannot injure or make the thermometer inaccurate. The dials are made of porcelain enamel in two colors.

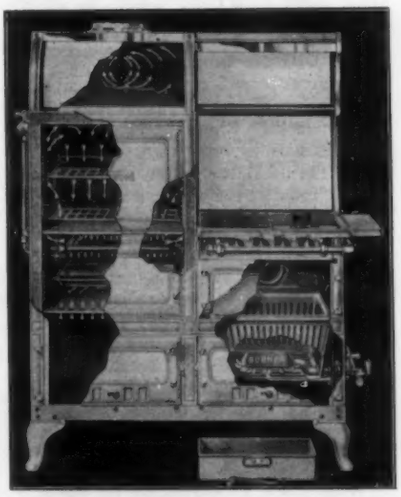
The Cooper Heavy Duty Thermometer is designed for all industrial type of ovens such as Baker's Brick Ovens, Core Ovens, Drying Ovens, Japanning Ovens, etc. The dial is 5 to 5½ inches in diameter with a stem fourteen to forty-two inches to fit various sizes of ovens. The dial can be read from 15 to 20 feet away.

Copies of bulletins will be sent on request.

Below is shown the range oven thermometer:

Built-in Incinerator Gas Range

The Glenwood Range Company, Taunton, Mass., has recently brought out a gas range with which is incorporated an incinerator.



The incinerator receptacle is located just below the top burners, an ample door giving access to the same. It has a double feed door arrangement and is flue connected so that all odors are claimed to be prevented from entering the kitchen. The capacity of the incinerator is 12 quarts.

In addition to the incinerator feature this range has a heat controlled oven and is thoroughly insulated. There is also a double duty combination Giant and simmering burner, operated by one cock with a locking arrangement.

One Good Turn Deserves Another

Mr. William J. Welsh, president and general manager of the New York and Richmond Gas Company, credited the sale of a modern gas range the other day to the prompt use of an inhalator operated by the emergency crew of the gas company.

Dr. Arthur S. Driscoll, of the staff of St. Vincent's Hospital, Staten Island, who has been conducting a series of "first aid" demonstrations on Prone Pressure Resuscitation before groups of Campfire Girls and Boy Scouts, discovered that one of his patients in the maternity ward of the hospital, the wife of a prominent local bank official, had given birth to a child which, to all appearance, was without life.

Dr. Driscoll immediately called the gas company and within a few minutes the emergency crew was at work over the apparently lifeless body of the infant. Breathing was restored with the use of the inhalator within a short while. At last reports, the child was well on the way towards a healthy and presumably happy existence.

The following day the mother of the child suggested to her husband that he immediately visit the gas company to extend his appreciation and to buy the best gas range on the floor—which he subsequently did.

New York Consolidated to Have World's Largest Switchboard

The largest telephone switchboard in the world to be devoted exclusively to the use of an individual customer is being constructed for the Consolidated Gas Company of New York by the New York Telephone Company. The switchboard will contain 600,000,000 feet of wire of various sizes and lengths and will cost approximately $200,000 to build and install.

The board will be placed in a room fifty-four feet long and thirty-four feet wide on the Auditorium floor of the new building of the Consolidated Gas Company, Fourteenth Street and Irving Place. In an adjoining room, thirty-six feet long and forty-four feet wide, will be located the batteries and necessary terminal connected with the switchboard.

There will be forty-one young women operators at the switchboard with provision for seventy-five operators should that number be ultimately required. The switchboard will be 125 feet long. At the present time the Consolidated Gas Company has twenty-one telephone operators who handle approximately 6,000,000 "calls" each year or about 27,000 a day. Altogether there will be fifty operators on duty when the new switchboard is in place, the nine in excess of the forty-one being necessary to fill in at luncheon hours and whenever necessary during the day.

Natural Gas Line to Austin

Several days ahead of agreement the line of the Southern Gas Utilities Company notified the Austin Gas Company of the completion of the main gas line to Austin, Texas, and the supplying of natural gas began at the first of March. The line is fifty miles long and extends from New Braunfels, which city got its first gas on December 11. The line to Austin is a twelve-inch. The distributing system in and extension to Seguin was completed and gas served to that city on December 15.

Southern Gas Utilities owns the distributing systems at New Braunfels and Seguin as well as the line to those cities. The distribution system at Austin is owned by the Austin Gas Company, which was controlled by S. G. Ohrstrom Company, New York. Southern Gas Utilities will put in a distributing system at San Marcos, to be completed and put in operation by June 1.

Natural Gas to Oust Coal

The Colorado Fuel and Iron Company are the biggest coal mine owners in Colorado, yet it is understood that just as soon as the natural gas coming from Amarillo, Texas, is available at Pueblo, Colorado, the gas will be turned into the Minnequah steel plant of the C. F. & I., and then make a circuit of its various mills and auxiliaries to the steel mill. It has been stated that these mills will use more gas than the rest of the city of Pueblo, a city of about 100,000 people. Hence the company will have a lot of its coal to go to market that formerly went to the mills. It is now and has been for years a large wholesaler and retailer of coal. The gas will be available early this summer.

Natchez Does Good Appliance Business

During the year 1927 the Central Power and Light Company, Natchez, Miss., sold 453 space heaters, 121 ranges, 61 tank heaters, 53 house heating appliances, 19 automatic water heaters and 26 hot plates.

The total sales, including electric appliances, amounted to approximately $33,000. It is expected that the total sales in 1928 will run close to $60,000. The population of Natchez is 13,000.

Northern Indiana Public Service Company Increases Net Income in 1927

The net income of the Northern Indiana Public Service Company, operating electric and gas utilities in the north section of Indiana, was $2,784,901.58 in 1927, according to the annual report of the company being prepared for presentation to the Indiana Public Service Commission. This is about $100,000 more than the year before. Gross operating revenue for the year was $11,845,849.66, an increase of 7.8 per cent in 1926.

Sales of gas during the year totaled 4,743,147,324 cu. ft., an increase of 7.6 per cent over the year before. Twenty-one per cent of the gas sold was for industrial purposes.

Wants Natural Gas

Clayton, New Mexico, along the line of the Amarillo-Denver natural gas pipe line, seems desirous of getting natural gas and has been made a rate of 67½ cents per thousand feet; the minimum monthly bill to be $1.50. This is cheaper than coal and with the knowledge that the house will be cooler in summer, no ashes, coal, wood, etc., to be worried with, it is practically certain the gas service will be established.

Customers of Philadelphia Suburban-Counties Gas and Electric Company to Enjoy Rate Reduction

Reductions in rates for gas and electricity, resulting in a saving of $1,092,246 to customers of the Philadelphia Suburban Counties Gas and Electric Company, a subsidiary of the United Gas Improvement Company, have been announced by Arthur W. Thompson, president of the company. Mr. Thompson's announcement was made following the filing of new tariffs with the Public Service Commission of Pennsylvania at Harrisburg.

"The new tariff schedules filed with the Public Service Commission today are in line with the policy of the U. G. I. management to share with the consumer savings resulting from the economical operation of the properties in which the company has an interest," said Mr. Thompson.

"The new rates for both gas and electricity that are established by the tariffs will make it possible for the consumer to use a larger volume of the company's products at lower unit cost.

"The purpose of these reductions is to put into effect rates which would encourage consumers to use more gas and electricity, thus bringing about a closer relationship of the demand for gas and electricity to the company's production capacity."

The new gas tariffs eliminate the $1.70 sliding scale rate in the Delaware district, the $2.25 rate in the Jenkintown district, the $1.90 rate in the Bucks County district, the $1.90 rate in the Bristol district, the $1.60 rate in the Phoenixville district, and $1.40 rate in the Coatesville district.

These rates are replaced by new charges which will give them 200 to 500 cubic feet of gas per month for $1 and makes the maximum rate for all gas used in excess of that amount vary from $1.10 to $1.30, depending upon the district supplied. These lower rates, officials say, place the price of gas within reach of all the company's customers, making it possible for them to utilize fully gas for cooking and water heating purposes.

The new tariff for gas service in Delaware County and the Jenkintown area places both of these rapidly growing suburban districts of Philadelphia upon an equal basis.

Phoenixville, Coatesville, Pottstown and a number of smaller communities in the territory served by the company also are placed upon a uniform reduced scale of rates for gas service.

U. G. I. Net Profits Nearly Thirteen Million in 1927

The United Gas Improvement Company in 1927 earned net profits of $12,934,457.26, according to the profit and loss statement of the company made public today. This is 12.56 per cent on the average capital stock outstanding during the year and represents an increase in net profits of $3,591,843.27. Profit from the operation of the Philadelphia Gas Works under lease was $629,011.97, an increase of $384,405.46.

The company's earnings in 1927 from regular sources were $12,124,364.49, an increase of $1,803,786.35; from special sources (sale of investments), $1,814,926.34, an increase of $1,072,693.74. The total earnings were $13,939,290.83, an increase of $2,876,480.09. Taxes, salaries and expenses amounted to $1,633,845.54, a decrease of $330,957.72.

Capital stock dividends paid during the year amounted to $8,144,072, an increase of $1,627,184. The balance to undivided profit account was $4,790,385.26, an increase of $1,964,659.27.

Making Splendid Progress

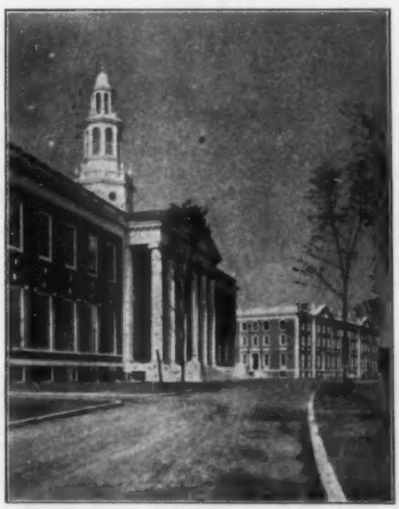
Winter weather has not stopped the laying of the natural gas pipe line between Denver and Amarillo, Texas. On March 1 more than 230 miles of the 365-mile pipe line had been laid.

Harvard Course for Utility Executives

A six weeks summer course in public utility management and economics for business executives will be given July 9 to August 18 this year by the Harvard University Graduate School of Business Administration.

Professor Philip Cabot will have charge of the course, which will cover legal, economic, financial and technical phases of utility management. It will include a study of court and commission decisions covering valuation, depreciation and fair return, and cases from utility practice in marketing, rate-making, operation, finance and production.

The course is intended for executives and their assistants, statisticians, sales managers and production superintendents of public utilities; members of regulatory commissions, investment bankers and teachers of law and business are also eligible.



Baker Library and Morgan Hall, Harvard

U. G. I. Acts to Prevent Unemployment

The necessity of speeding up the 1928 construction program of the various public utility companies in which the United Gas Improvement Company is interested has been urged upon officials of the company by Arthur W. Thompson, president, as a means of affording a measure of relief to the unemployment situation in Philadelphia and vicinity. Mr. Thompson believes the situation demands serious consideration on the part of public authorities and the heads of large industrial and public utility organizations.

The budgets of the companies in which the U. G. I. has an interest provide for the expenditure of approximately $20,000,000 for construction work of all kinds in the Philadelphia metropolitan area, in Eastern Pennsylvania, in Northern Delaware and in other Eastern States. The three principal companies embraced in the U. G. I.'s activities are the Philadelphia Electric Company the Philadelphia Gas Works Company and the Philadelphia Suburban-Counties Gas and Electric Company.

Mr. Thompson's letter on the subject to the management committee says that discussions in Congress and in the press indicate the employment situation "demands serious consideration on the part of public utilities and of the heads of organizations like ours. . . . Confidence is a necessary factor in the development of any line of endeavor. The confidence that is now lacking in some lines of business will quickly be restored if some of the major construction operations throughout the country are started at this time."

Recommends Customer Ownership of Stock

S. B. Irelan, of Kansas City, manager of the securities department of the Cities Service, was a recent visitor to Denver. He is of the opinion that it is more healthy for a large corporation to have a million little stockholders than to have its stock held by a handful of millionaires. The Cities Service has from 350,000 to 400,000 stockholders, nearly all of the wage-earning and salaried classes, Mr. Irelan said.

Prominent Gas Men to Lecture at Massachusetts Institute of Technology

As a part of the course in Fuel and Gas Engineering at the Massachusetts Institute of Technology, a series of lectures by men who possess special knowledge of important phases of gas manufacture will be given during April and May. These lectures are scheduled as follows:

April 6—"Coke Oven Construction and Operation," Mr. D. W. Wilson, Wilputte Oven Corp.

April 16—"Purification of Gas," Dr. F. W. Sperr, Jr., the Koppers Co.

April 27—"Low Pressure Distribution," R. S. Carter, Malden and Melrose Gas Light Co.

May 4—"High Pressure Distribution of Gas," A. W. Grant, Jr., Koppers Co.

May 11—"Handling of Coke and By-Products," A. M. Beebe, general superintendent, Rochester Gas and Electric Corp.

The course in Fuel and Gas Engineering at Technology is now in its third year and is open to graduate engineers. It consists of nine months work at the institute, followed by six months field work at stations which are located at the following plants:

Cambridge Gas Light Company, Cambridge, Mass.;

Edgar Station of the Edison Electric Illuminating Company of Boston;

Lackawanna Works of Bethlehem Steel Corporation;

Mineral Springs Plant of the Iroquois Gas Company of Buffalo, and

Bayonne Refinery of the Tide Water Oil Company.

To Make Gas Survey

At a regular session of the Municipal Council of the city of Sherbrooke, Quebec, Canada, at the City Hall, on the 19th day of March, 1928, G. W. Allen, industrial survey engineer of Toronto, Canada, was appointed to make a complete inspection and survey of the industries, hotels, restaurants, cafes, institutions, colleges and hospitals, for the purpose of ascertaining possibilities for increased use of gas on an efficiency basis.

According to Mr. Allen, the work is to cover approximately one month, and every effort will be made to bring to the attention of the business men of Sherbrooke how gas can be successfully and efficiently used at the present time in over 21,000 different processes. Mr. Allen is also secretary-treasurer of the Canadian Gas Association, but privately of late has been making some very successful industrial gas and business surveys in a number of Canadian cities.

Authorizes Investments in Utility Securities

A bill has been introduced in the Senate and Assembly at Albany, N. Y., by the special committee on banks authorizing the investment by savings banks in the securities of certain gas, electric and telephone companies.

Files Certificate for Increasing Shares

The Consumers Natural Gas Company, Elmira, N. Y., has filed a certificate in the office of the Secretary of State increasing its number of shares and changing par value from 800 shares $25 par value to 4,000 shares non par value.

To Extend Gas Service in Indiana

Plans for the extension of gas service to Chesterton, Porter and several smaller communities between Valparaiso and Michigan City have been announced by the Northern Indiana Public Service Company.

Officials of the company stated that construction of a gas pipe line connecting Valparaiso and Michigan City will begin early in April. This pipe line will also make possible extension of gas service to Flint Lake, Woodville, Tremont and other points along the line. The pipe line, which will be 23 miles in length, will run north from Valparaiso to Tremont and then east to Michigan City.

It is estimated that installation of the gas distribution system in Chesterton and Porter will require about 90 days. Franchises for the furnishing of gas by the company were passed by the town boards of those communities several months ago.

Indiana Commission Adopts Important Resolution

The Indiana Public Service Commission has unanimously adopted a resolution that the charging to operating expense of large sums incurred by audits, appraisals and attorney fees be made from the net income and paid from the utility's own pocket.

Essay Prizes Awarded

The Southern Gas Association recently awarded three prizes in an essay contest. The subject of the essay was, "If It's Done by Heat, You Can Do It Better with Gas." The following awards were made:

First Prize—$100 in cash or a trip to Jacksonville meeting, April 17, 18, 19, 1928. Won by Miss Oma Buchanan, Memphis Power and Light Co., Memphis, Tenn.

Second Prize—$25 in cash. Won by Miss Janie Lou Beck, Georgia Power Company, Atlanta, Ga.

Third Prize—$15 in cash. Won by Mrs. Annie B. Smith, Tampa Gas Company, Tampa, Fla.

All of the essays submitted to the judges in this contest were favorably commented upon and showed rare ability in their preparation.

Personals

Mullaney and Abell to Address Southern Gas Association Convention

The Southern Gas Association has scheduled a splendid program for their coming convention in Jacksonville, Fla. Among the speakers will be Bernard J. Mullaney, vice-president A. G. A., and vice-president the Peoples Gas Light and Coke Company, and Harry C. Abell, vice-president Electric Bond and Share Company.

Carter Leaves Indiana Commission

Earl L. Carter has announced his resignation as chief engineer of the Indiana Public Service Commission, effective April 1, in order to enter private consulting work. In his position as engineer for the Commission, one of his principal duties was to fix valuations of utilities for rate-making purposes. He entered the service of the Commission in 1917 as assistant engineer and succeeded Harry O. Garman as chief six years ago. He graduated from Purdue University in 1914 and received a master's degree in 1918.

Harry V. Wenger, former member of the engineering staff of the Commission, has been selected as Mr. Carter's successor. Mr. Wenger went with the Commission since 1917 and also is a graduate of Purdue.

Members of the Commission said the big job was to find a competent appraisal engineer. This is particularly true now in view of tendencies of commissions and courts to give much consideration to appraisals.

Kirchmer Heads Committee

"Clean-Up Week for 1928" will be observed in Brooklyn May 6 to May 12 under the auspices of the Cleaner Brook-

In the spring a woman's fancy

turns to beauty with more enthusiasm than ever.

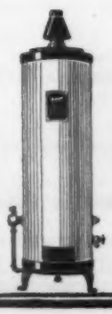
She is more interested in the "promenade deck" than the "galley". So, approach your water-heater prospects with the story of Hotzone as a beauty aid. Here you will find the least sales resistance. Furnish the gentle reminder that crystal-clear hot water is needed right at the tap if the proper attention is to be given to the skin and complexion. This is the fundamental selling idea that Welsbach has introduced with marked success. It is as modern as the Hotzone and as fundamental as its principles of operation.

The Welsbach Hotzone is made in four sizes: Fifteen, Twenty, Thirty and Forty-five gallons. The line is complete.

To tie in with this sales idea, Welsbach has prepared a series of newspaper advertisements which commercial managers can turn over to their advertising departments. Proofs and permission to run the advertisements as prepared will gladly be given. Write Welsbach Company, Gloucester City, New Jersey. *Offices* in Principal Cities.

Member of American Gas Association

Welsbach



HOTZONE

SELF ACTION GAS WATER HEATER

lyn Committee of The Brooklyn Chamber of Commerce.

Officials of the police, fire, street cleaning, health and tenement departments, as well as a representative of the Magistrates Courts, have been organized on a committee headed by George M. Kirchmer, of the Brooklyn Union Gas Company's staff, to take active charge of the campaign.

This committee, which also includes representatives of the fire insurance companies, women's clubs, girl scouts, boy scouts and other organizations, will carry on a drive to enlist the support of civic groups and individuals, as well as pupils of all the local schools, in observance of the week.

The committee has announced the opening of the annual poster contest. Pupils in all the public and parochial schools of the borough may enter this contest. There will be three prizes: First, $50; second, $25, and third, $15.

The prize poster is to be copied for billboard and show-window display cards which will be used during the campaign week.

A feature of this year's campaign will be the distribution through utility groups of thousands of circulars stressing the purpose of Clean-Up Week.

Stuart Wilder Honored at Complimentary Dinner

A surprise dinner was recently tendered to Mr. Stuart Wilder because of his recent elevation to the vice-presidency of the Bronx Gas and Electric Company. The dinner was attended by some thirty-five men, consisting of officials, department heads and their assistants. The women employees sent a beautiful bouquet of roses which graced the table in front of Mr. Wilder's chair.

Burns Made Manager of Insurance and Personnel Dept. of U. G. I.—Douglas Becomes His Assistant

John L. Burns, formerly assistant to president of the United Gas Improvement Company, was recently promoted to manager of the Insurance and Personnel Department of the company. James B. Douglas was appointed assistant manager of the department.

This department has jurisdiction over insurance, personnel, safety, welfare and claims.

Mr. Burns came to Philadelphia on September 1, 1926, when Arthur W. Thompson became president of the U. G. I. Previously he had been associated with Mr. Thompson for twenty years in public utility work.

Mr. Douglas, the assistant manager of the Insurance and Personnnel Department, who resides at Swarthmore, Pa., entered the employ of the U. G. I. in the Claim Division, February 16, 1901. He is a pioneer in the industrial safety movement and in employee welfare work.

Myers Appointed Assistant to President of U. G. I. Company

Edward B. Myers has been appointed assistant to the president of the United Gas Improvement Company, being promoted from assistant to J. T. Hutchings, vice-president in charge of engineering development. In announcing the appointment of Mr. Myers, Arthur W. Thompson, president of the company, said the action was in line with the management's policy to promote employees whose service records entitled them to recognition.

Edward B. Myers

Mr. Myers has been associated with the U. G. I. or its subsidiaries for 24 years, starting as a cadet engineer with the City District of the Philadelphia Gas Works in 1904, following his graduation from the Mechanical Engineering Department of the University of Pennsylvania.

The new assistant to the U. G. I. president was born in Philadelphia, September 27, 1882.

Everson Discusses Pulverized Coal

J. E. Everson, general superintendent of the Sioux City (Iowa) Gas and Electric Company, discussing use of pulverized coal in his plant power units at the second annual power conference at the University of Iowa, Iowa City, recently explained the drying and crushing processes, charted the savings in burning and other advantages of this new fuel supply. Pulverized firing, he said, put Iowa coal, admittedly inferior, on a par with any other coal so far as physical results obtained are concerned, and he concluded with the statement that he believed "powdered fuel firing is the ideal method of firing steam boilers, and under our operating and geographical conditions the most economic one."

Laclede Employee in Line for Olympic Team Berth

Clifford Doetzel, of the auditing department of the Laclede Gas Light Company, has boxed his way to the flyweight championship of the Western Amateur Athletic Union for the second time, March 8th, at the Coliseum in St. Louis.

The latter part of April, Doetzel, a modest youth of 18, will seek the National Amateur Title at Boston, and if he is successful there he will represent the United States in the Olympic meet at Amsterdam.

Wade Elected President of Southern Counties Gas Company

After having served as president and general manager of the Southern Counties Gas Company for the past 17 years, Ferdinand R. Bain resigned at the regular monthly meeting of the board of directors held in Los Angeles. The board accepted Mr. Bain's resignation, which is to take effect immediately, and at the same meeting advanced Franklin S. Wade, vice-president and manager of the corporation, to the new position of president and general manager.

Mr. F. S. Wade is widely known throughout Southern California and the Pacific Coast as an executive and leader in the gas industry. Mr. Wade has made the gas business his life work, entering the industry with the Los Angeles Gas and Electric Corporation upon graduation from the University of Southern California in 1905.

Mr. Bain will remain as a director of the Southern Counties Gas Company and in the future will be chairman of the board. In retiring from active participation in the management of the gas utility he will be free to devote his time to extensive private interests and to gain more leisure for travel and recreation.

Mr. Wade has been active in the introduction of natural gas in Southern California and the development of the gas industry as a whole. He served as presi-

THE KOMPAK CO.

Automatic Thermostatic Gas Water Heaters

NEW BRUNSWICK
NEW JERSEY

Alone AT THE TOP

In every industry there is always some one manufacturer—with an ideal. Some one with the courage and the vision to build the best that money can buy.

Years ago, KOMPAK started the ripple, which has grown to a giant wave of national appreciation for automatic storage water heaters. Then, as now, KOMPAK set a new standard of water heater service, and, as all other manufacturers are chasing after the rainbow of low price, the Kompak stands more securely alone in its

POSITION OF GREATEST

QUALITY ECONOMY SERVICE SAFETY

Due to unequaled manufacturing facilities, efficient management, with a low overhead, the price of the KOMPAK is not high.

THE KOMPAK COMPANY,
NEW BRUNSWICK, N. J.

KOMPAK

dent of the Pacific Coast Gas Association in 1922-23 and has been associated with the American Gas Association for many years.

Changes at the Public Service Company of Colorado

Clare N. Stannard, vice-president and general manager of the Public Service Company of Colorado, announces the following changes: Thomas Gray, manager of the Brighton district, has been transferred to the Alamosa district, relieving F. B. Barnett, who goes to Maine. C. C. Chipman, manager of the Berthoud district, relieves Gray at Brighton, and Arthur Patterson, of the Denver office, will assist Chipman. Roy T. Blanchard, cashier of the Boulder office, has been transferred to Denver. He was relieved by Ernest R. Saegart, of the Salida office.

Parks Made Manager of Natural Gas Operations

F. T. Parks, for many years an employee of Henry L. Doherty interests in the Gas Division of Cities Service Company, has been appointed manager of the natural gas operations of Public Service Company of Colorado, by Clare N. Stannard, vice-president and general manager, according to announcement made public March 8, 1928.

Mr. Parks is a welcome addition to the Public Service Company force and stepped immediately into the harness in the task of bringing natural gas from the Amarillo fields to the city of Denver.

Prior to his connection with the Colorado Company, Mr. Parks was a member of the Gas Division of Cities Service Company with headquarters in the Bartlesville office of the Empire Gas and Fuel Co.

He is a graduate engineer of the Kansas State Agricultural College of Manhattan, Kansas, and has been in the Doherty organization since 1916.

Obituary

George McQuaid Dies

George McQuaid of Dallas, former director of the Texas Public Service Information Bureau, died at his home in Dallas on March 5.

Mr. McQuaid was widely known throughout the Southwest, having spent many years on various newspapers, holding all positions from reporter to managing editor. He was at various times managing editor of the Dallas News, the San Antonio Express, the Galveston News and the Guthrie (Okla.) Capital.

In public utility circles he had gained a wide acquaintance through his work with the Texas Information Bureau, which he organized, and later as public information director of the Central and South West Utilities Company, which is the Insull holding company in the Southwest.

He was well known to the officers and publicity directors of the various national utility associations and was a close friend of many of the state directors.

Mr. McQuaid was instrumental, by virtue of his five years of hard work with the Texas committee, in bringing about the friendly understanding which exists between the public and their utility services in Texas.

The funeral was held in El Paso and was in charge of the Masonic fraternity. He is survived by his widow, his mother, Mrs. G. J. McQuaid, of Kansas City; a brother, Frank McQuaid, of Kansas City, and two sisters of Portland, Ore.

Death of Ralph Blakeman

While visiting his mother at Windsor, Colo., February 25, Ralph Blakeman, the thirty-year-old manager of the Public Service Company of Colorado, at Louisville, Colo., was taken ill. His death occurred February 28.

Samuel F. Moran, Prominent Attorney, Dies

Samuel F. Moran died from a complication of diseases at St. Vincent's Hospital in New York City on March 20.

Mr. Moran was closely identified with the utility business, being attorney for the Brooklyn Edison Company, Inc., Kings County Lighting Company, Citizens Water Supply Company of Newton, Cohoes Power and Lighting Corporation. In addition, he was active in other interests and corporations.

Mr. Moran rendered signal service for the Kings County Lighting Company in the hearings regarding the 80-cent and dollar gas law. In this connection he took up where other lawyers had left off and ultimately obtained a successful verdict in the Court of Appeals. Through his efforts the 80-cent gas law was declared invalid with respect to the Kings County Lighting Company in the Federal Courts and the United States Supreme Court. His law offices were at 14 Wall Street, New York City.

Mr. Moran is survived by his wife and by six children. He was a member of the Bankers Club, the Lawyers Club, New York Athletic Club, Catholic Club, Siwanoy Country Club, and of the American Bar Association, New York State Bar Association, Bar Asssociation of the City of New York, and New York County Lawyers Association.

Trade News and Construction

U. G. I. Contracting Co.'s Activities

The Public Service Electric & Gas Company has placed orders with the U. G. I. Contracting Company for exhaust steam manifold equipment for two 11 foot and two 10 foot 6 inch carburetted water gas sets at the Paterson, N. J., plant. These manifolds will be 10 inches and will enable the sets to be operated with exhaust steam, thereby conserving the live steam production of the plant.

In connection with its work of extending its mains and services over rapidly expanding territory, the Philadelphia Suburban-Counties Gas & Electric Company has contracted for the installation of compressor plants at its Oreland and West Conshohocken stations.

At the Oreland plant a 300,000 cu. ft. daily capacity compressor will be installed, together with the necessary foundations, gas, steam and water connections.

At the West Conshohocken plant a compressor of similar size will be installed, together with the necessary connections.

The Peoples Gas Company, Glassboro, N. J., one of the subsidiaries of the C. H. Geist Company, is remodeling its 8 foot 6 inch carburetted water gas apparatus by the addition of a nine foot generator and other parts. The work is being done by the U. G. I. Contracting Company.

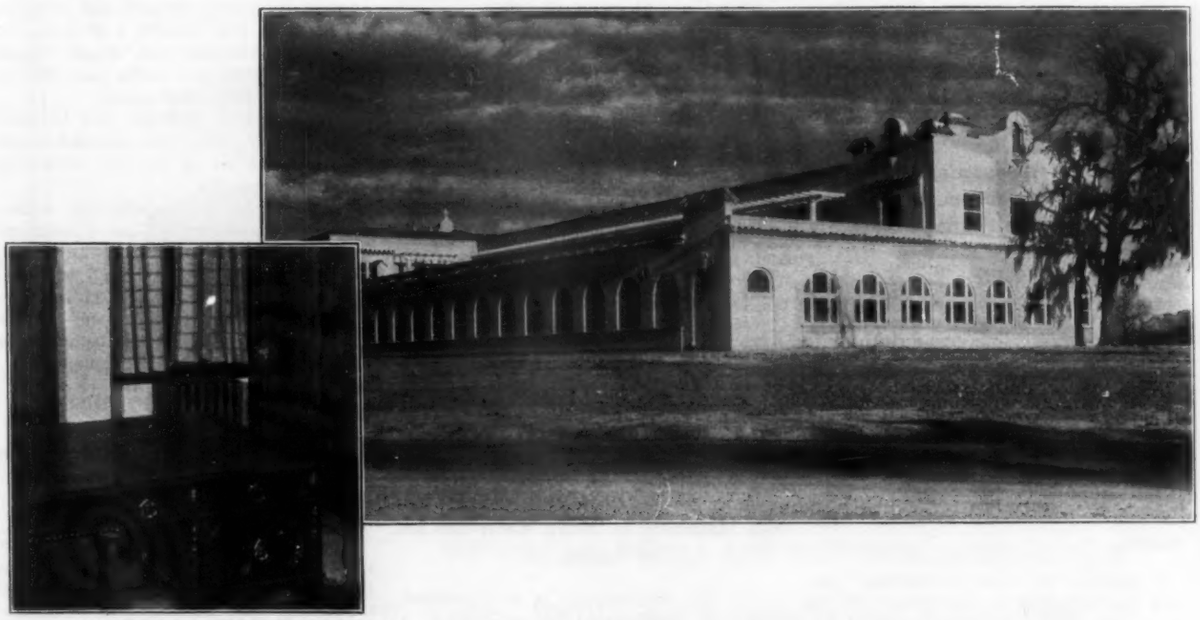
The Wilmington, Del., Gas Company has contracted for the installation of an additional U. G. I. vertical waste heat boiler to be connected to an 11 foot U. G. I. cone top carburetted water gas apparatus.

A few years ago the Wilmington Gas Company was enabled to keep its plant in operation with its first waste heat boiler, when flood conditions on the Chester River extinguished the fires in its regular boiler plant.

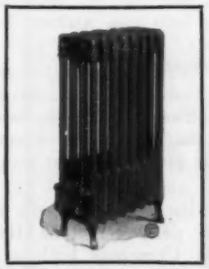
The Interstate Public Service Company, Bedford, Ind., contemplates extensive improvements to its plant. There will be installed a 5 foot U. G. I. carburetted water gas apparatus equipped with Chrisman cycle, also monorail electric fuel handling system, U. G. I. tar extractor and two 10 foot circular steel purifiers; together with take-off mains, yard connections, piping and other miscellaneous work.

In addition to the above, equipment

STEAM FOR HEAT — GAS FOR FUEL



Clow Gasteam (*unvented*) Heats This Printing Plant As It Should Be Heated



The fact that Clow Gasteam Radiators heat the new printing plant of the Gulf Publishing Company, Houston, Texas, brings to light another type of installation where Gasteam is valuable.

For this printing plant, unvented radiators were used. They provide the humidity so necessary for the proper printing and handling of paper stocks.

In addition, this flexible heat is an economy. For at night, when only the press room needs heat, only that part need be heated. The office radiators are not used.

And, jobs like this are just one type of the many that are "going gasteam." Every gas company should have its share.

Every gas company official should read our catalog. Send for it today. It illustrates the application of Clow Gasteam for every type of job, and in every part of the country

JAMES B. CLOW & SONS
201-299 North Talman Avenue, Chicago

CLOW GASTEAM

A. G. A. and Underwriters' Laboratories Approved

STOCKED IN EVERY SECTION OF THE COUNTRY

now at the Bloomington plant of the same company will be removed to the Bedford plant and erected by the U. G. I. Contracting Company. This will include the blowing plant, condenser and carburetted water gas apparatus.

Semet-Solvay Engineering Corporation to Install Five Million Cu. Ft. Tar Extractor at Pontiac—Other Contracts Received

The Consumers Power Company, Pontiac, Mich., has placed an order for a P. & A. tar extractor which will have a capacity to handle 5,000,000 cubic feet of water gas a day.

The Steere-built tar extractor is provided with an enclosed tar overflow. This inside overflow is warmed by the gas passing through, which keeps the tar thin and enables it to absorb naphthalene.

A quantity of Steere welded steel pipe will be installed in the plant of the Texas Louisiana Power Company, Pecos, Texas. An order for exhaust, muffler and intake pipe has also been placed. Part of the material will be galvanized. Steere welded sleeve joints are specified, which will eliminate flanges.

Twelve stacks of Steere cooling coils will be installed in the new gas plant of the Combustion Engineering Corporation to be built at Piscatawaytown, N. J. They will be 26 stacks high, electro-sherardized to resist corrosion and tested to withstand a pressure of 200 pounds per square inch.

The Virginia Public Service Company of Newport News has placed an order for nine stacks of Steere sherardized cooling coils. These coils, together with two pumps, complete a recent washer cooler installation furnished by the Semet-Solvay Engineering Corporation.

The Peoples Gas and Power Company, Clinton, Iowa, is installing a new 30-foot gas scrubber of the dry bottom type and a moisture separator, which will be built of welded construction. The new equipment also includes a quantity of Steere welded steel pipe and gate valves connecting relief holder, scrubbers, purifiers and meter.

The Sloss-Sheffield Steel and Iron Company, Birmingham, Ala., has placed an order for 26 stacks of Steere cooling coils. They will be used on the gas scrubbers to provide increased capacity. The stacks will be 40 tubes high and will be zinc coated by sherardizing to resist corrosion.

The By-Products Coke Corporation, South Chicago, has ordered two ammonia washers and a wash liquor reservoir for its ammonia plant. The apparatus will be used in the production of pure liquid ammonia. The plant handles approximately 7,000 gallons of liquor an hour.

This new Semet-Solvay ammonia apparatus will be built of aluminum and will replace units of cast iron construction. Semet-Solvay engineers have substituted aluminum for cast iron on much of their by-product apparatus, because of the resistance which aluminum offers to acids. Aluminum equipment also makes lighter apparatus and is claimed to be high in operating efficiency.

Semet-Solvay is building for the Worthington Pump and Machinery Corporation three cooler shells for its Laidlaw works at Cincinnati. These shells will be of butt welded construction and tested for 50 pounds working pressure. The shells will be welded inside and out and plate steel flanges will be welded to each shell.

Gas Machinery to Install Water Gas Set at Galena, Ill.

The Gas Machinery Co. of Cleveland, Ohio, is furnishing equipment for a water gas set which will be erected in the gas plant at Galena, Ill.

The contract also includes exhauster, tar washer, purifiers and auxiliary equipment.

The Hyde Park Gas Company of Scranton, Pa., has placed an order for three breeze collectors for the stacks of their water gas apparatus.

These breeze collectors are for the purpose of eliminating the breeze and dust nuisance in the neighborhood, and for providing cleaner yard, plant and keeping the holder cups clean.

The City Gas Coompany, of Norfolk, Va., has placed order for one Seven Valve Automatic Control, complete with auxiliary equipment.

The automatic control is installed for the purpose of operating at short cycles with great accuracy, producing uniform quality of gas, requiring less materials and labor, reducing the wear on the apparatus, and increasing the capacity of the set.

The gas company at Laurium, Michigan, has placed an order for equipment for a six-foot water gas set.

The original gas company at Laurium was a coal gas plant, but water gas equipment was added several years ago and the gas company is now preparing to take care of their increased sales and continue the good service they have always given in the past.

The Jersey Central Power & Light Co. of Dover, N. J., has placed order for cooling scrubber equipment, complete with sprays, ladder and railing.

The contract also includes Gas Machinery Company cooling coils, of their latest design, which coils are built for greatest simplicity, strength and efficiency.

The order also includes a P. & A. Tar Extractor, complete with drum, counter balance weights, test cocks and differential pressure gauge with piping.

The Wisconsin Southern Gas Company of Burlington, Wis., has awarded a contract for one set of six-foot carburetted water gas apparatus.

The contract also includes tar washer, purifiers, station meter, gas connections, and auxiliary equipment.

The new water gas set will be placed alongside of the water gas set furnished by the Gas Machinery Company a short time ago, and will provide the gas company with spare generating equipment.

Ovens at New Albion, Mich., Gas Plant Built by the Improved Equipment Company

The gas-making apparatus recently installed at the new plant of the Albion (Mich.) Gas Light Company embodies the feature that the ovens can be utilized as a purely coke producing proposition, with gas as a by-product, if the occasion arises.

This plant, which was begun approximately one year ago, embodies a number of new and distinctive features. The gas from the ovens passes through a new type of hydraulic-foul main. In the usual type of plant there are two mains, the hydraulic and the foul, but here the two are combined into one, making for greater convenience.

There are ten ovens, each of which will hold 2,500 pounds of coal; a charge of coal can be handled in a few seconds, from one larry load. Electrical operation is used on the pushers and at other places.

The capacity of the new plant will be 300,000 cubic feet per day. The Improved Equipment Company built and installed all the coal and coke handling equipment and gas generating apparatus, including the ovens, producers and all electrically operated machinery.

On March 19 the first coke was pushed from the ovens by Glenn H. Niles, chief engineer of the Improved Equipment Company.

This type of plant was designed for companies with a moderate output of gas.

Fisher Becomes President of Bartlett Hayward Company

At a meeting of the directors of the Bartlett Hayward Company held on February 28, Mr. Howard Bruce resigned as president of the company and was elected chairman of the board.

SELF HEALING
SOUTHWESTERN
PIPE JOINT RINGS

Style 900 Southwestern Special square braid genuine all jute. Shipments from stock on reels of approximately 100 lbs. each.

Southwestern Rings Make Tight Joints in Old or New Mains

RUBBER compound to make tight gas joints is available for either old or new mains by use of Southwestern Rings, Style 1100 and Style 1300. We also furnish a pure square braid jute, as illustrated, specially made for use with either of the Southwestern Rings.

STYLE 1100 AND 1300

Style 1100 Ring is endless and for use on new pipe line construction where it can be slipped over the spigot before the pipe are put in ditch. Style 1300 Ring is furnished in reels—sufficient strip being cut off to lap several times around an existing pipe line. We furnish a special joint-removing machine which cuts the old materials from a leaky joint in a few minutes.

WRITE FOR PRICES AND FURTHER INFORMATION

Southwestern Pipe Joint & Engineering Company

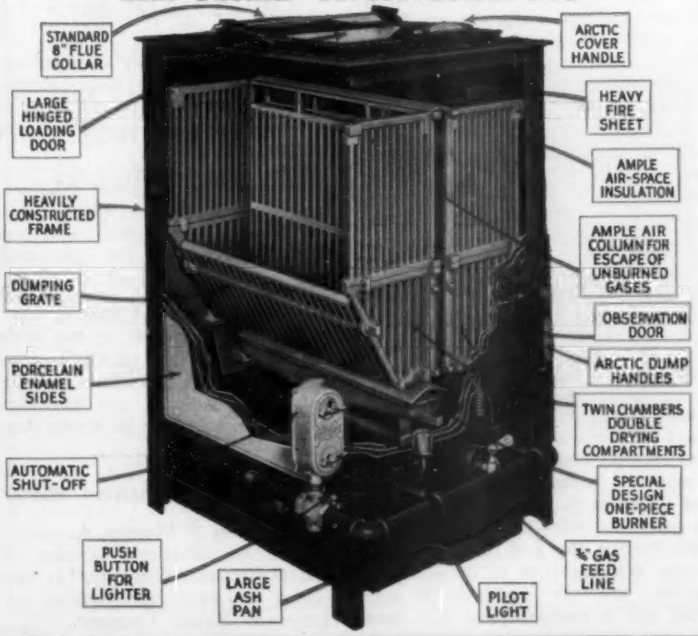
1108-1110 5th Avenue, North, Birmingham, Alabama

(Factories Passaic, N. J.)

Kernit

REG. U.S. PAT. OFF.

GAS-FIRED INCINERATOR



Show your customers the whys and wherefores of safe, efficient and complete incineration of garbage and rubbish. The results will astonish you.

The KERNIT is made in three and four bushel capacities and is built to withstand hard usage.

It will increase your off-peak domestic load approximately 10,000 to 15,000 cubic feet per customer annually, and give you also an attractive profit on the sale of the appliance.

Send for catalog and prices. Sales literature and advertising helps furnished.

Kernit Incinerator Co.

Ampere New Jersey

Mr. Howell Fisher, who has heretofore been first vice-president and general manager, was elected president. Mr. Albert C. Bruce was elected a vice-president. The other officers of the company were re-elected.

Mr. Bruce has been president of the Bartlett Hayward Company for eighteen years. Mr. Fisher has been vice-president for twelve years.

The change of officers has no significance, but is made to make the official title of officers more nearly fit their activities.

Lawlor Joins Groble Organization

Robert H. Lawlor, assistant to the general manager of Consumers Power Company, Jackson, Mich., in charge of gas construction, production and distribution, has joined the organization of the Groble Regulator Company at Anderson, Indiana, to provide skilled gas engineering advice and counsel in connection with the distribution and installation of Groble Service and Plant Regulators.

Robert H. Lawlor

Mr. Lawlor has a wide circle of friends in the gas industry. He knows the gas business from the ground up, through some twenty-five years practical experience with the problems and development of the industry. His experience has been with both natural and artificial gas and he has served in four different States.

Mr. Lawlor's first connection with the gas industry was through Dawes Brothers, of Chicago. Subsequently he served with the C. H. Geist Company, at Philadelphia, Pa.; Pure Oil Company, Columbus, Ohio; F. C. Elston Company, Chicago, and Consumers Power Company at Jackson, Mich.

He will join the Groble Regulator Company organization April 1.

New Sixteen Foot Unit of McWane Cast Iron Pipe Co. in Operation

Continuous operation and complete flexibility as to sizes and footages manufactured are given as the outstanding characteristics of the new sixteen-foot cast iron pipe unit of the McWane Cast Iron Pipe Company at Birmingham, Ala.

The new foundry went into operation January 1 and was stepped up to double shift and a large increase in production on March 1.

The new unit is designed to make pipe in sixteen-foot lengths according to the McWane specifications, in sizes from 4 to 12 inches. The new mechanical process is said to be both evolutionary and revolutionary. It is pointed out as a method of making in stationary horizontal moulds in green sand, with green sand cores, a pipe that combines the modern greater strengths and lighter weights with the qualities of old time sand cast pipe. It is termed an adaptation of up-to-date foundry processes and principles to the manufacture of pipe and follows the plan upon which the foundries of large automobile manufacturers operate.

In the McWane process the same moulds are used over and over again. Flasks, sand and cores each move in its own separate path to the assembling point. Sand handling machinery, ramming, core-making shake-out machines, and a battery of overhead cranes work together as one huge unit in the handling of sand, iron and moulds. The moulds—once ready—travel to the casting zone. A number of 16-foot pipe are poured at one operation. In the wake of the ladles of molten iron come the operations of the core-bar pulling machine, the mechanical shake-out and the return of the flasks to the sand handling equipment for immediate further use.

The pipe is "rattled" in tumbling mills designed for cleaning sixteen-foot pipe, and goes on to the finishing, testing, dipping and joint-making department.

By June the McWane foundries in Birmingham will have extended their range of sizes upward to include 12-inch pipe in 16-foot lengths, it is stated; and their pipe four inches and larger will be offered either with or without the McWane precalked joint in the bells. One and one-quarter, two and three inch cast iron pipe will continue to be made as heretofore, and the company is also bringing out a screwed-joint cast iron pipe for conveyance of gas or air under high pressures. The design of this new pipe is a female thread on the inner surface of the bell and a male thread on the outer surface of the spigot. The spigot screws into the bell, the pipe wall being built up at the point of threading as a reinforcement and taking the next larger size standard thread.

McCoy Becomes General Sales Manager of Cleveland Gas Burner and Appliance Company

W. P. McCoy has been appointed general sales manager of the Cleveland Gas Burner and Appliance Company, Cleveland, O., makers of the Barber Patented Jet Gas Burner.

W. P. McCoy

Mr. McCoy recently resigned as sales manager of the Gas Range division of Abendroth Bros., Port Chester, N. Y., where he had been engaged during the past three years.

He comes to his new position well equipped with years of experience in the gas industry and a fine background of unusual success in the gas appliance field.

During his eleven years in the sales promotion department of the Welsbach Company and his three years with Abendroth Bros. he has visited and promoted the sales of gas appliances in every important city in North America.

Wagner Joins Homestead Heater Co.

Mr. Charles S. Wagner, formerly manager of the Magnesia Division of the General Ceramics Company, has been appointed mid-west representative of the Homestead Heater Company.

THEY'RE PASSING THE DIVIDENDS THESE DAYS

BUT NO "HOOK 'ER TO THE BILER" INDUSTRY IS DOING IT

Here is a sample of the thousands who have Ridgway Elevators AND ALL THE FINEST OF MONEY MAKERS:

Standard Oil Co.
Cluett, Peabody & Co.
H. J. Heinz Co. ("57")
Crane & Co. (Dalton)
Packard Motor Car Co.
Swift & Co.
United Gas Imp. Co.
Larkin & Co. (Buffalo)
General Electric Co.
Penn. R.R.
International Harv. Co.
Standard Underground Cables Co.
John Wanamaker
John Morrell & Co.
Christie Brown & Co. (Toronto)
Firestone Tire & Rub. Co.
Consolidated Gas Co. (N. Y.)
Remington Typewriter Co.
Canadian Pacific R.R.
Procter & Gamble Co. (Ivory Soap)
E. I. du Pont de Nemours & Co.
United States Gov't
Sears, Roebuck & Co.
United States Steel Co.
Westinghouse Elec. Co.

No unadvised Architect or Engineer can put Troublesome Elevators over on the **WELL MANAGED CORPORATION** when there is steam available and

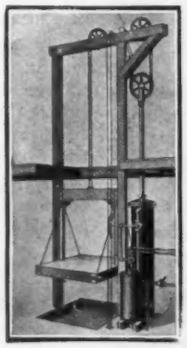
THE RIDGWAY—PERFECTION IN ELEVATORS—CAN BE USED

A few things perhaps you don't know:
Uncle Sam had us change elevators to Ridgway.
All the **Big Gas Works** in N. Y. City had us do the same.
The **General Electric** and **Westinghouse** use Ridgway Elevators.
The **West Point Military Academy** use Ridgway Elevators.
The **Chateau Frontenac Hotel** is equipped with Ridgway Elevators.
Wrigley the Chewing Gum Man uses the Ridgway Elevator.
Larkin the Soap Man uses Ridgway Elevators.
Moral. If you want to be a Big Success as Architect, Engineer or Manufacturer, you will

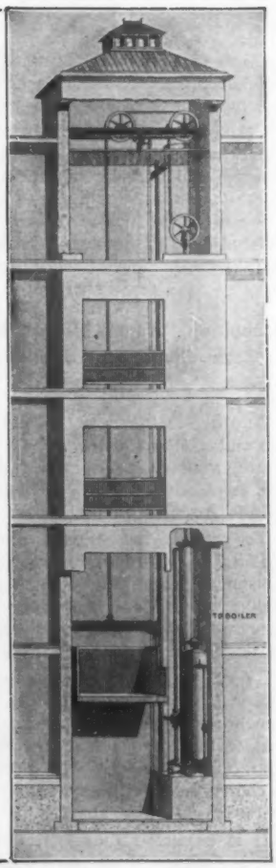
"HOOK 'ER TO THE BILER"

CRAIG RIDGWAY & SON CO.
Over 3,000 *in daily use.* COATESVILLE, PA.

Direct Acting



Double Geared



SUPERIOR

Gas Meters
Provers
Service
Cleaners
Diaphragms

SUPERIOR METER CO.
167 - 41st Street
Brooklyn, N. Y.

Mr. Wagner is well known to the gas appliance manufacturing fraternity through serving them for many years in connection with their requirements in refractory materials.

He will establish his headquarters in Chicago and exercise supervision over the interests of the "Coalfires" and the "Woodfires" in Indiana, Illinois, Michigan, Wisconsin, Minnesota, Mississippi and Kansas.

Humphrey Water Heater to Supply Trans-Continental Runners with Hot Water

Another instance of the importance of gas and gas appliances is the great transcontinental running race managed by the aggressive C. C. Pyle, which began in Los Angeles on March 4th.

To provide hot showers for the runners a No. 8-A Humphrey Instantaneous Automatic Gas Water Heater was installed on a Mack truck equipped with two tanks of rock gas for fuel and connected to tin portable showers.

Every night at the trans-continental running race control the portable showers will be connected to the heater, cold water connected to the heater, and operated to provide hot shower baths to the runners. The controls referred to are 60 to 70 miles apart.

It is expected these runners will arrive in Chicago about April 5th.

General Coal Company Engages Services of J. L. Eigenbrot

The General Coal Company in an effort to be of every assistance possible to present and prospective consumers of Roda Gas Coal have secured the services of J. L. Eigenbrot, who has for some years been in executive charge of the Lowell Gas Light Company, Lowell, Mass.

Mr. Eigenbrot will make a very careful study to ascertain what improvements can be made in the preparation and sizing of Roda Gas Coal to meet the gas industry's requirements, as well as a study toward development of a better understanding between the General Coal Company and its customers, and to render such assistance as may be possible in connection with the merchandising of coke produced by the carbonization of Roda Gas Coal.

King Appointed Representative

The Guardian Gas Appliance Company, Cleveland, O., has appointed Wm. Keith King, formerly of the Union Gas Corporation, Coffeyville, Kansas, as its representative in the States of Kansas, Oklahoma, Arkansas and Colorado. His headquarters will be Oklahoma City.

Steinwedell Becomes President of Gas Machinery Company

W. E. Steinwedell has succeeded the late Pierre Plantinga as president of the Gas Machinery Company, Cleveland, Ohio.

Mr. Steinwedell has had a wide experience in the gas industry and in the manufacture of gas equipment. He has also been active in association activities.

He was born in Quincy, Ill., and graduated in mechanical engineering from the University of Illinois in 1893. Later he did post-graduate work at the University of Chicago in gas analysis and chemistry.

His gas experience covers work with the St. Louis and Cincinnati Gas Companies, Continental Gas Company in Europe; Quincy (Ill.) Gas and Electric Company, and Belleville (Ill.) Gas, Electric and Street Railway Company.

Mr. Steinwedell was one of the incorporators of the Gas Machinery Company in 1902.

Webber Becomes Member of Industrial Appliance Company

Mr. L. G. Webber has become a member of the firm of the Industrial Appliance Company of New England. He formerly represented the Eclipse Fuel and Engineering Corporation, Gehnrich Indirect Heat Oven Company, The Partlow Corporation, Franklin Gas Appliance Company, Superior Oven Company, and the Refractory Engineering Corporation. These accounts will now be handled by this organization.

Stove Company to Increase Size of Plant

Great expansion in gas range business in recent years and demand for greater production has led the Elgin, Ill., Stove and Oven Company, of which Fred W. Dietrich is president, to plan construction of a new unit, 50x135 feet, this spring to meet its production schedule increase.

Coal Gas Plant Being Installed at Clinton, Iowa

The Interstate Power Company, furnishing Clinton, Iowa, with gas, has started construction of a $200,000 coal gas manufacturing plant, which will have a daily capacity of 750,000 cu. ft., and also capable of additions to increase the output to 1,000,000 daily. The new plant will be in operation early in November. It will have a daily production also of 32 tons of coke for local distribution, consuming 48 tons of coal for this purpose. The plant will be one of the first installations of its kind in the State, vertical retorts being used, the gas coal being elevated 60 feet to the top of the retorts and discharged from the bottom as coke.

Automatic Safety Appliance Corp. Holds Annual Meeting

The annual meeting of the stockholders of the Automatic Safety Appliance Corporation was held Monday, March 5, at the company's office, 108 Greenwich Street, New York City. The following were elected directors for the ensuing year: J. Morris Coerr, Rutherfurd L. Coerr, L. D. Childs, T. N. Motley and F. B. Bard.

The directors held their meeting immediately thereafter, electing as officers of the company: J. Morris Coerr, president; L. D. Childs, vice-president; Frederick B. Bard, secretary; H. W. McConchie, treasurer.

This company manufactures the "Asac" Automatic Safety Pilot.

Western Gas Construction Company To Install Purifier at Muskegon

The Muskegon Traction and Lighting Company of Muskegon, Michigan, has let a contract covering purifier installation, twenty foot diameter by fourteen foot high complete with necessary twenty-inch welded steel piping for circle series connections and will shortly have the box in operation.

Purchases Sanford Gas Plant

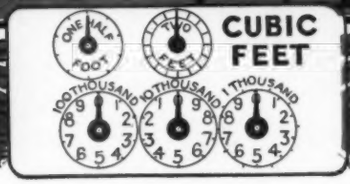
The Charles B. Hawley Engineering Corporation of Washington, D. C., has purchased the municipality owned gas plant from the City of Sanford, of Sanford, Fla., and started operating same March 1.

P. E. Scott, who has for some time past been connected with the city in charge of the gas division, is now connected with the new owners as manager.

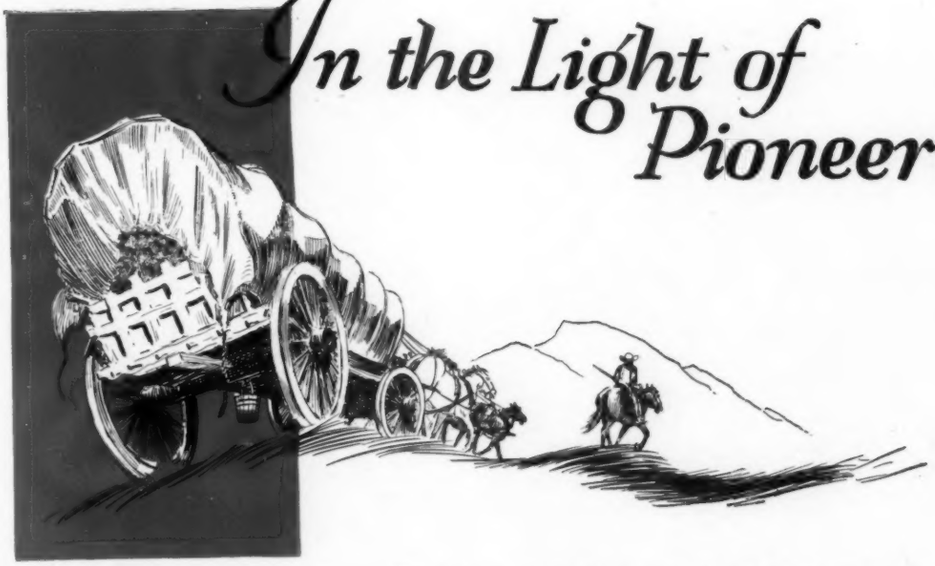
$380,000 Gas Improvements Approved

Henry L. Doherty has placed his O. K. on the $380,000 improvement plans to take care of and serve natural gas to the city of Pueblo, the gas to come from Amarillo, Texas. The work of laying the pipe is going right along. A. M. Talbott is manager of the Pueblo office.

KNOWN FACTORS IN METER VALUE



In the Light of Pioneering



The days of early pioneering live in memory; rugged days, fired by a dauntless spirit of enterprise.

Well forward in the caravan of industry, the first factory of American Meter Company began in 1836 a period of pioneering that has lasted, throughout the entire Company, right up to the present day.

The gas industry has benefited thereby. Through pioneer research and experimentation, American Meter Company has blazed new trails in efficient and economical performance, yielding the best efforts of its engineers and research laboratories toward the advancement of industrial practice.

Continuous pioneering is a known factor in meter value.

The Growth of American Meter Manufactories

New York 1836
Philadelphia 1848
Albany 1855
Boston 1860
Baltimore 1866
Erie 1888
Chicago 1896
San Francisco 1901

• • • •

Kansas City and Los Angeles

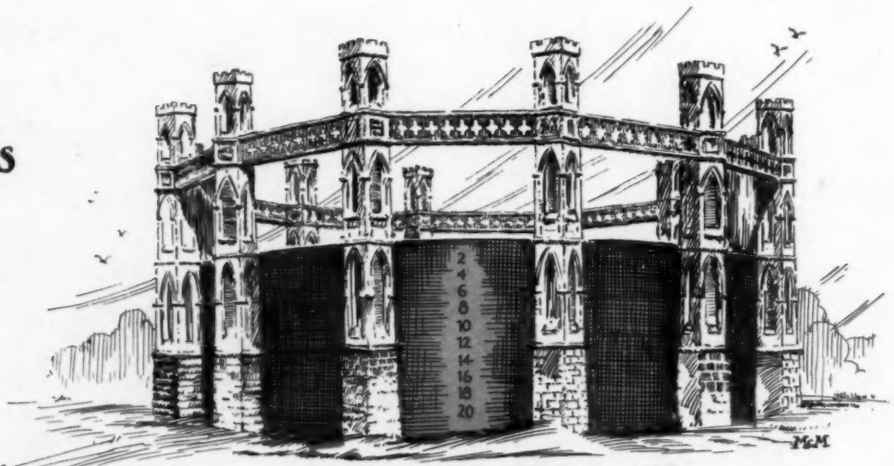
AMERICAN METER COMPANY

INCORPORATED

The World's Largest Manufacturers of Gas Meters and Allied Apparatus

Established 1836

Responsiveness to Requirements



GAS HOLDER ERECTED IN 1853
CAPACITY 1,800,000 FEET

A Policy Founded in 1859

In 1859 John J. Griffin began to meet the requirements of his customers, laying a sound foundation, in structure and policy, for a leadership to be maintained in future years.

When John J. Griffin built his first meter there were approximately 297 gas companies in the United States, supplying customers through 227,655 meters. Better equipment was slowly marking progress even in the Gas Industry of that day. Upon the furnishing of such better equipment depended the accelerated progress of the future.

In 1859 responsiveness to the needs of the industry forecast the progress achieved today. This same responsiveness to needs of customers actuated the building of the A Type Meter in 1905; a product of John J. Griffin & Company, designed by the Meter Superintendent of a large gas company. The A Type Meter solves a specific problem in METER INVESTMENT.

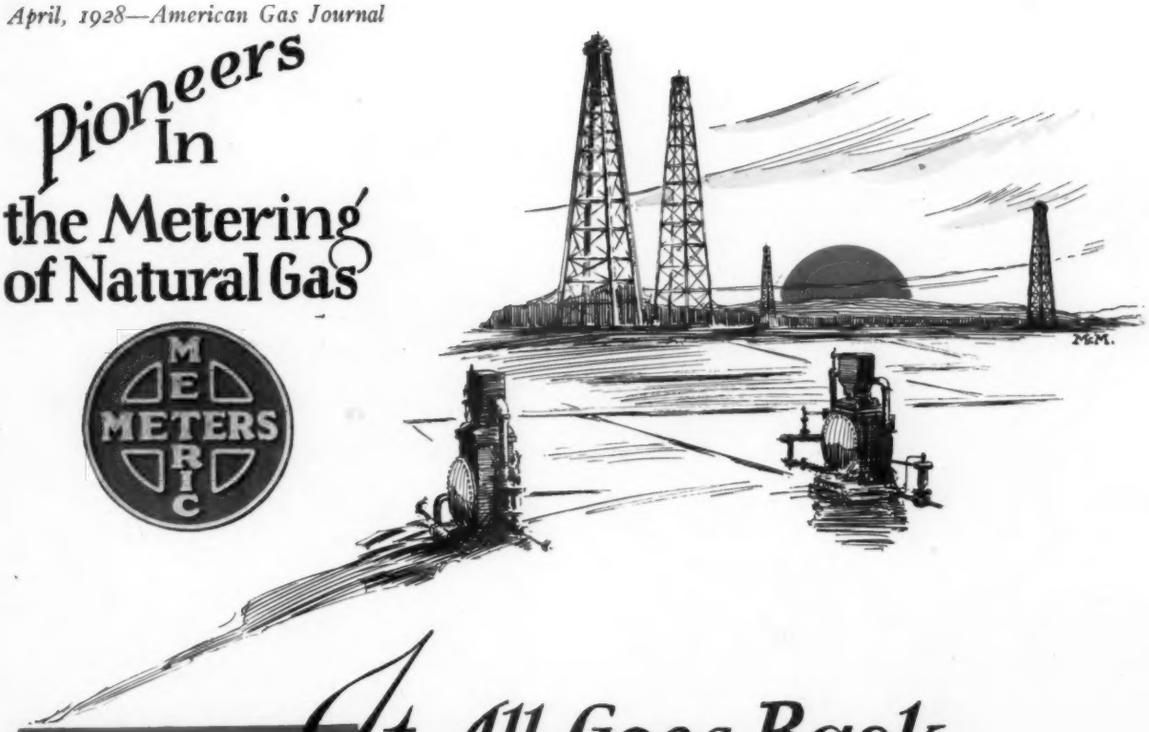
John J. Griffin & Co.

1513 RACE STREET, PHILADELPHIA, PA.

Established 1859

AMERICAN METER COMPANY
INCORPORATED

Pioneers In the Metering of Natural Gas



It All Goes Back to Metric Meters

Time was when natural gas was sold by the size of the opening in the mixer through which it was delivered, without regard to the manner of its combustion and use.

It was in 1888 that Metric Meters, pioneers in this field, first offered to replace haphazard methods of measurement with scientific measurement control.

Thus the meter came to the rescue and enabled this convenient fuel to be profitably sold and effectively used. It is estimated that under the meter system a saving was achieved in natural gas of fully one-half the gas required to accomplish identical, comparative results.

In 1868 one of the first attempts to employ natural gas for fuel purposes was made at a well drilled at Erie, Pa.

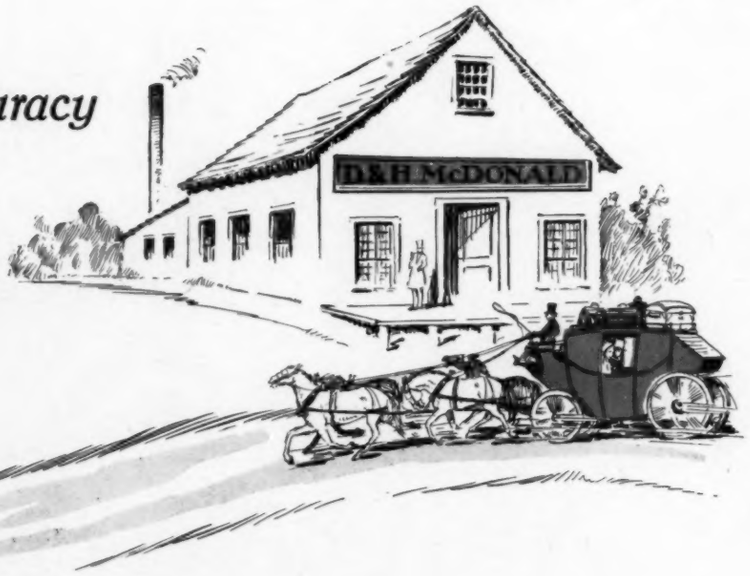
It was, therefore, in the early days of the industry that Metric Meters first set the standard for the economical measurement of natural gas.

THE NATURAL GAS HAND-BOOK
by JOHN C. DIEHL
is recognized as the most complete treatise on the history, production, transportation and distribution of natural gas.

Published by the
METRIC METAL WORKS

METRIC METAL WORKS
of the American Meter Company, Inc.
ERIE · PENNSYLVANIA · U·S·A·

Even in 1855
Quality and Accuracy
were Paramount



When D. McDonald and Company Started a Meter Shop

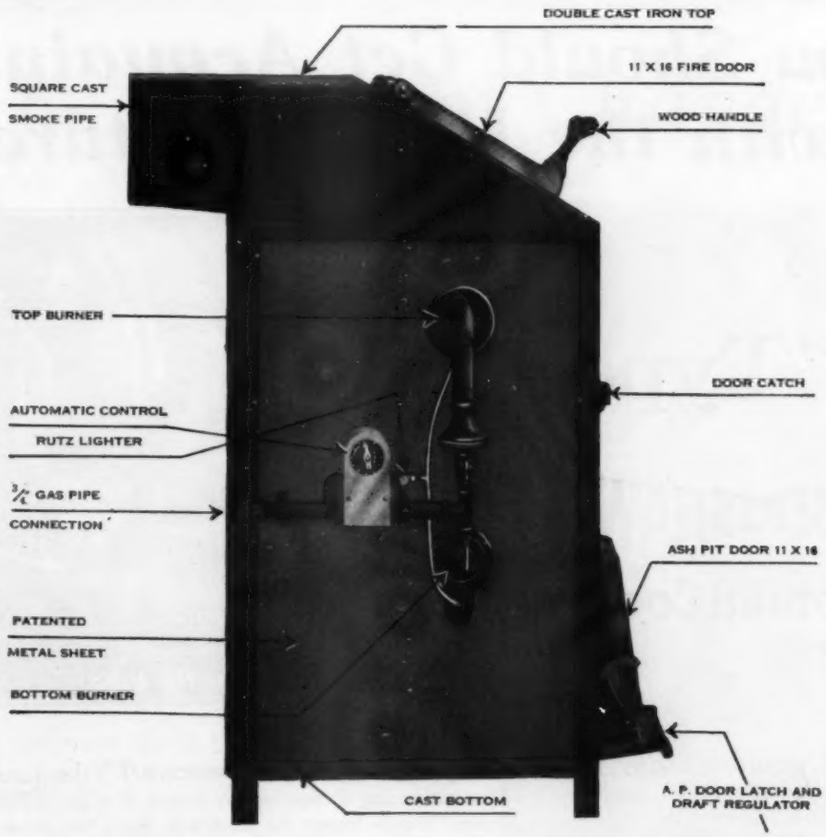
at 51 Lancaster Street, Albany, N. Y., stage coaches ran to that city.

This was in 1855.

Yet even then quality and accuracy were paramount. Raw materials were of the best. Painstaking steps were taken to secure accuracy. Quality was more than a term; it was a code of manufacturing practice that has been retained and strengthened throughout the years—as real today as when D. & H. McDonald opened shop and began to serve the gas industry.

Such integrity of purpose breeds confidence. Modern manufacturing methods are necessary to build modern products, but the old ideals of craftsmanship remain unchanged.

D. McDonald & Company
ALBANY, N. Y.
Established 1855
AMERICAN METER COMPANY
INCORPORATED



Complete Burning of 4 Bushels of Garbage and Rubbish in 15 Minutes

[Heavy Duty Automatic Type]

TEEKORATOR
PORTABLE
INCINERATOR

[Gas Burner Above and Below]

(Does not have to be built in)

The heavy duty automatic type Teekorator Incinerator is built for homes, stores, schools, etc. At the Detroit Builders' Show it burned four bushels of rubbish with high per cent of moist garbage in fifteen minutes!

Equipped with two Rutz torch heads and special burners: one set above the contents, the other below. Operated by Rutz lighter either together or independently. These twin burners effect complete, rapid and thorough incineration. Automatic shut-off if desired.

Sturdily built to stand continuous burning. Even when working at capacity there is no odor. Quickly, simply installed in any home or building; new or old. Flue leads into regular chimney. Moderately priced. Indorsed and sold by leading gas companies. It is the kind of portable incinerator your company should be handling.

Make a note now to write for complete Teekorator details, prices and Special Gas Company Merchandising Plan

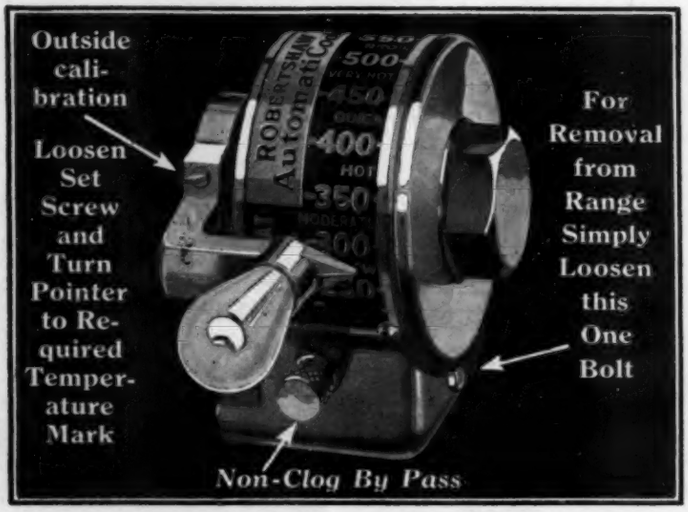
Teekorator, Inc. *42 East Ave.* **Rochester, N.Y.**

You Should Get Acquainted with the Latest Features

of the

"B" Type

ROBERTSHAW AutomatiCook



Outside Calibration (*a comparatively late improvement*) Takes just a few seconds to change the temperature setting if required, by means of a convenient set-screw on the temperature pointer. Merely loosen the set-screw, move the pointer to the proper temperature mark on the dial, and then tighten the set-screw.

Quick Removal (*a feature introduced about a year ago*) Should the "B" Type AutomatiCook become damaged for any reason, necessitating replacement, it can be removed without disconnecting the range or disturbing the linings or the piping. Requires no mechanical servicing or repairs on the job. Simply loosen one bolt, replace the Thermostat with a spare and tighten the bolt. The job can be done in less than a minute's time.

Non Clog By-Pass Pilot (*Successfully used for more than a year*) Will not clog nor bind. Always moves freely and maintains its adjustment. Eliminates servicing, adjusted by turning either to the right or left.

Another Improvement. The AutomatiCook is now being equipped with a Raised Non-Corrosive Valve Seat which will resist the corrosive action of gas, eliminating any possible trouble from this source.

Gas ranges will soon be coming through to you with AutomatiCooks having all these advantages!

LEARN THE DETAILS IN ADVANCE
WRITE FOR COMPLETE INFORMATION

If you will also send us the names of all employes handling, selling or installing Gas Ranges, we will be pleased to send them descriptive literature covering these features.

ROBERTSHAW THERMOSTAT CO.

Youngwood, Penna.

The "Chain of Change"

The evolution of household decoration brings us today to a point where it is more than a *desire* for new effects or the revival of old settings. It amounts to a *demand*.

The whole tendency is for "something different" — something distinctive and yet "truly appropriate."

To meet this demand for room heating real distinctive and attractive types of Woodfires and Coalfires should be in your display. They are different from the obsolete types of space heaters.

Homestead Fires Sell Easily

The unusual charm of Homestead "Woodfires" and "Coalfires," following out in minute detail all the characteristics of these two types of both fireplace heater and fireplace adornment, will naturally appeal to the lovers of art and romance.

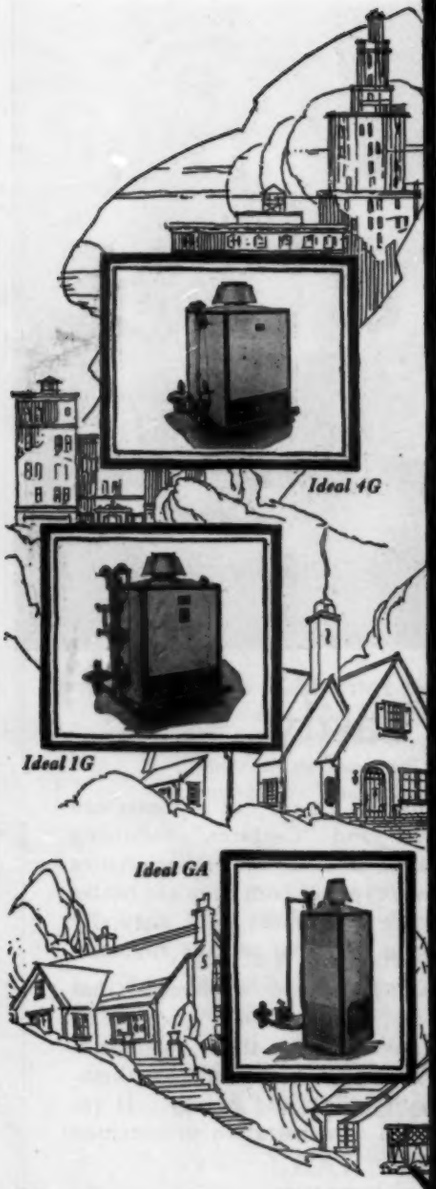
Homestead Fires are appliances that Commercial Managers can present as genuine novelties to their customers. They fill a long-felt want for a combination of both utility and beauty. It requires only a demonstration to conclude a sale.

The sooner you write for full information the sooner your profit begins.

HOMESTEAD HEATER COMPANY, Inc.

Selvage Street and Fabyan Place WALTER KENNEDY, PRESIDENT **Newark, N. J., U. S. A.**

AN IDEAL GAS BOILER *for* EVERY *heating need!*



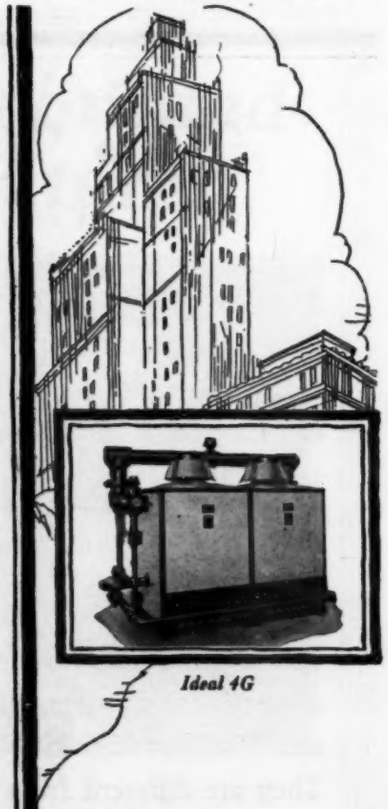
For cottages or bungalows—with or without basements—an Ideal Arcola Gas Heater!

For small or medium-sized homes —Ideal 1G Gas Boiler!

For larger homes and buildings— Ideal 4G Gas Boiler!

For office buildings, big apartment houses, hotels — Ideal 4G Gas Boilers in multiple units!

All these boilers are useful for large-volume hot-water supply and industrial applications.



THIS whole family of perfectly-designed gas boilers offers you *exactly* the right heating plant for *every* job on which you want to figure.

Designed and manufactured by the American Radiator Company, it is the latest triumph of their boiler engineers.

Ideal Gas Boilers are made available to you without delay by strategically-located distribution centers.

We have prepared for you a plan book covering every detail of selling plans that actually *work*. Won't you send for this complete and practical information?

IDEAL GAS BOILERS

Product of AMERICAN RADIATOR COMPANY *Gas Utilization Dept.*

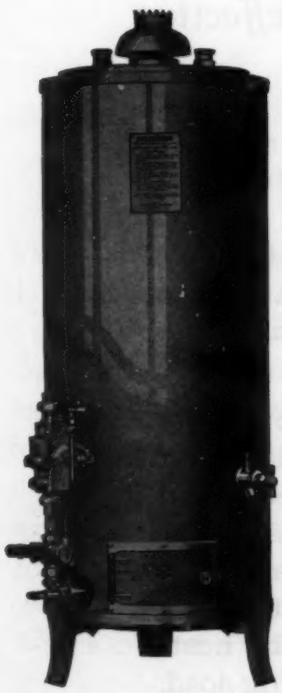
Write to AMERICAN GAS PRODUCTS CORPORATION, *Distributors*

376 Lafayette Street, New York City

The Profitable Volume Builder!

in number of sales and gas consumption, too, is the splendid Humphrey designed and built

KALAMAZOO Automatic Storage Heater



It Excels in

Appearance - Durability
Efficiency - Safety

Prices are low for volume selling and represent extraordinary value.

Margins permit the wide advertising and selling effort needed to get volume.

Color makes effective display. Design insures convincing demonstration and use.

Prices facilitate sales.

Reliability keeps them sold.

—an ideal combination for you

207 Sales in February

the most difficult time of the year, is the record of one northern company.

Does that interest you? Details on request.

HUMPHREY COMPANY

KALAMAZOO (DIV. OF RUUD MFG. CO.) MICHIGAN

AUTOMATIC CONTROLS FOR HOUSE HEATING

When You Feature Clock Control

— *automatic regulation is doubly effective in promoting gas heating*

The remarkable reception of clock control as a feature of automatic heat regulation is a highlight in the history of the heat regulator industry. Almost over-night, this development was accepted by the public and became an integral part of American living standards. Today over 90% of all automatic heat regulators are sold with clock control.

When gas companies capitalize this public responsiveness to clock control — the universal desire for warm rooms to dress in, without any interruption of early morning sleep — they are utilizing an argument of proved selling value. At the same time, they are going a long way toward the solution of a troublesome load problem, by separating the heating-up period from the breakfast cooking load.

Clock control is a subject of perennial interest to American home owners. Let us explain what it does of you in connection with your gas heating program.

MINNEAPOLIS
REGULATOR COMPANY
HONEYWELL

Executive Offices: Minneapolis *Factories:* Minneapolis and Wabash, Ind.

Vit

A Cleaner for Vitreous Enamel

Vit is something quite different from the ordinary run of cleaners. It has cleaning properties powerful enough to remove the deepest stain, yet without abrading the enameled surface . . . or dulling the luster. To remove a stain, sprinkle Vit on a damp cloth, and rub. When the stain disappears, sprinkle Vit on a dry cloth and polish.

Vit is invaluable to the housewife in keeping her range and enamelware clean and stainless. Display and sell it with your ranges. We provide an unusual display stand to help you sell. Send the coupon below for trial can of Vit and prices.

A PRODUCT OF THE A-B STOVE COMPANY

A-B STOVE COMPANY
BATTLE CREEK, MICHIGAN

Let's have a sample can of Vit, and your proposition.

Name .....Address .....

Like shingles—

Silica-Graphite flakes lie flat-close together—over and under each other

Thus an impervious film is formed—one that gives entire protection to every inch of surface under it.

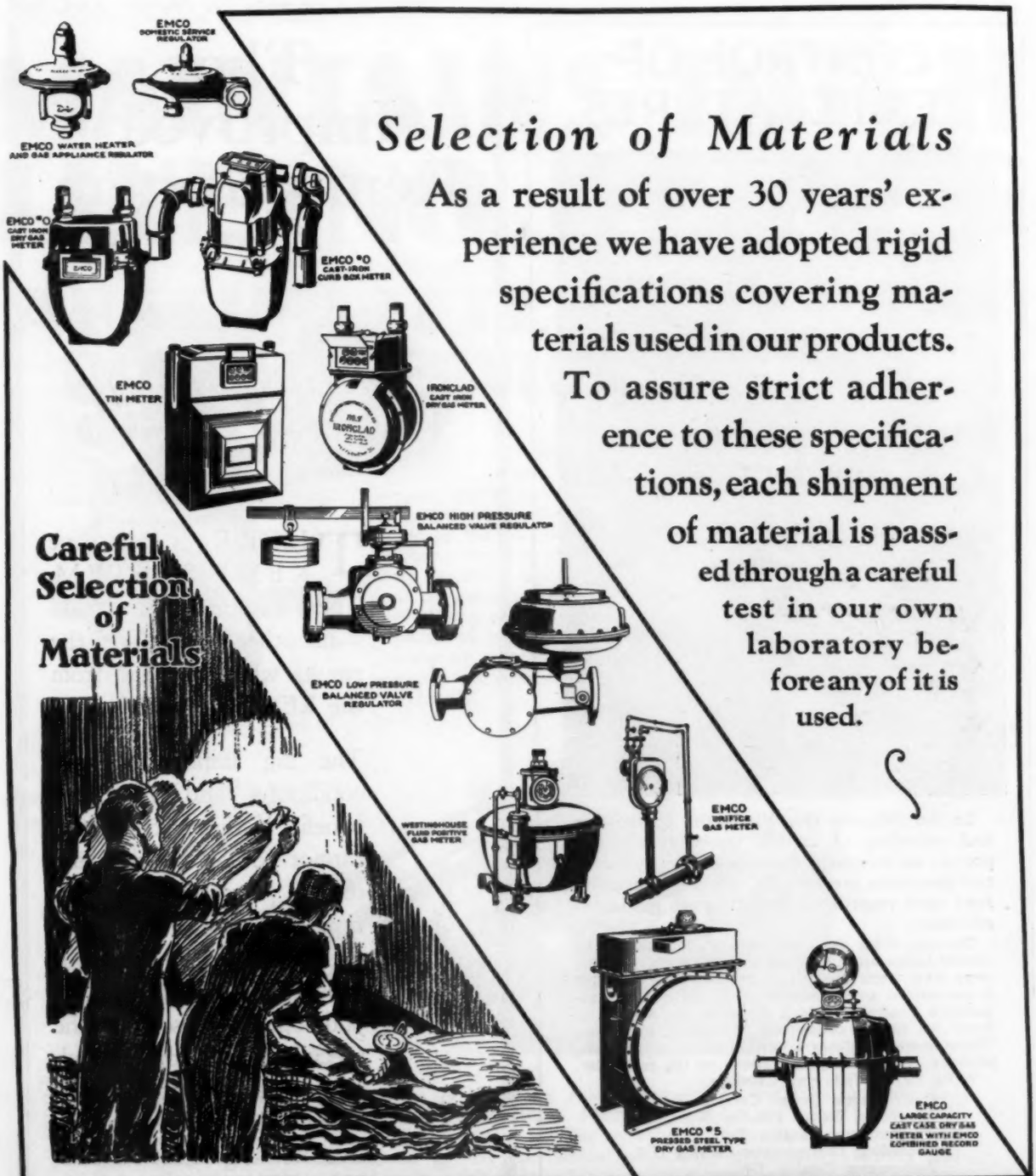
The pigment used in *Dixon's Silica-Graphite Paint* is flake graphite which is combined by nature with silica. The vehicle is boiled linseed oil. Every experienced paint maker knows that this combination provides the most satisfactory paint protection. Every user of *Dixon's Silica-Graphite Paint* knows this paint lowers their yearly painting costs by tenaciously clinging to and protecting surfaces to which it is applied in spite of moisture, fumes, and other destructive conditions found in and about industrial plants.

You'll be interested in our booklet 231-B. It tells the full story of this remarkable protective paint.

JOSEPH DIXON CRUCIBLE COMPANY
JERSEY CITY D X N **NEW JERSEY**
Established 1827

DIXON'S SILICA GRAPHITE PAINT

ADEQUATE PROTECTION AT MINIMUM ULTIMATE COST


EMCO DOMESTIC SERVICE REGULATOR
EMCO WATER HEATER AND GAS APPLIANCE REGULATOR
EMCO "O" CAST IRON DRY GAS METER
EMCO "O" CAST-IRON CURB BOX METER
EMCO TIN METER
IRONCLAD CAST IRON DRY GAS METER
EMCO HIGH PRESSURE BALANCED VALVE REGULATOR
EMCO LOW PRESSURE BALANCED VALVE REGULATOR
WESTINGHOUSE FLUID POSITIVE GAS METER
EMCO ORIFICE GAS METER
EMCO #5 PRESSED STEEL TYPE DRY GAS METER
EMCO LARGE CAPACITY CAST CASE DRY GAS METER WITH EMCO COMBINED RECORD GAUGE
Careful Selection of Materials

Selection of Materials

As a result of over 30 years' experience we have adopted rigid specifications covering materials used in our products. To assure strict adherence to these specifications, each shipment of material is passed through a careful test in our own laboratory before any of it is used.

PITTSBURGH EQUITABLE METER COMPANY

MAIN OFFICE AND WORKS PITTSBURGH, PA.

NEW YORK CHICAGO COLUMBIA, S.C. LOS ANGELES DALLAS
TULSA SEATTLE KANSAS CITY SALT LAKE CITY

CONTROL OF TEMPERATURES

In the Efficient Gas Plant, the controlling and recording of critical temperatures has proved an economy. Records of temperatures and pressures are records of plant operation. And such records of operation are guides to efficiency.

The gas from the condenser should be at the correct temperature entering the scrubbers. At this large New York Gas Plant the proper temperature is maintained automatically by an American Temperature Controller, which regulates the amount of water fed to the condenser. American Recording Thermometer produces a written record of the temperature, thus serving as a check on the controller.

Write for the following Catalogs:

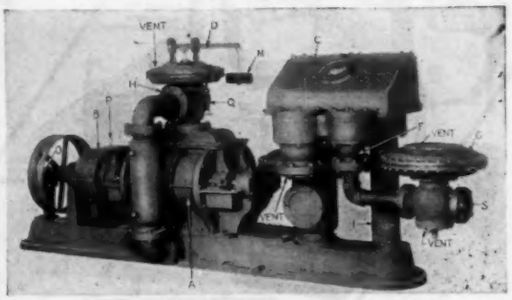
Gas Maker's Gauge Catalog P-7
Recording Gauge Catalog E-7
Thermometer Catalog F-7
Recording Thermometer Catalog H-7
Tachometer Catalog J-7
Temperature Controller Catalog R-7

AMERICAN INSTRUMENTS

American Schaeffer & Budenberg Corporation

338 BERRY ST. BROOKLYN, N. Y.
Branches in Principal Cities
Makers of American Industrial Instruments Since 1851

The Improved Kemp System



THERE is but one KEMP SYSTEM. There is nothing just as good —no other way to get the results which are had from the KEMP SYSTEM.

The big improvement in conditions and maximum benefits which you desire cannot be had by changing to high pressure, some other type of inspirator or a mixing fitting. It costs but little more to utilize with your operations some of the special applications which are common to the KEMP SYSTEM and are productive of the greatest benefits. The KEMP SYSTEM is the best investment.

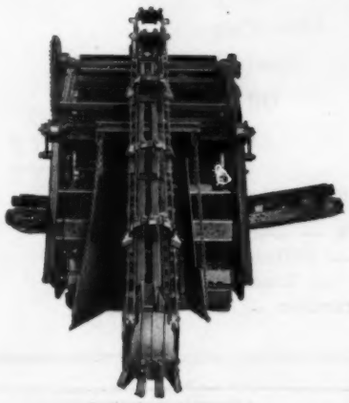
Write, phone or telegraph today for a representative

THE C. M. KEMP MFG. CO.

Baltimore, Md.

MAINTAINS DITCH LINE-NO JUMPING

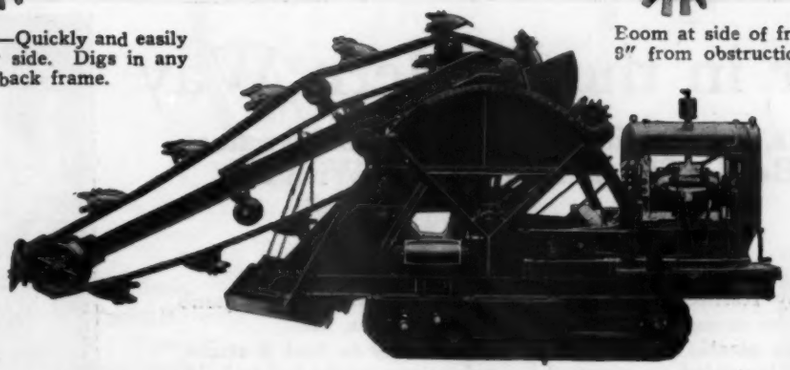
AUSTIN "LITTLE WONDER" PUBLIC SERVICE DITCHER



Boom at Center—Quickly and easily shifted to either side. Digs in any position across back frame.

Greater weight and balanced machinery layout prevent jumping while digging. Therefore, the ditch line is maintained by the "Little Wonder" Ditcher. Positive crowding of boom against breast of the ditch also aids in holding ditch line. Austin has the experience required to build a ditcher of unmatched performance and one that will measure up to requirements.

Boom at side of frame ready to dig 9" from obstructions.



Austin experience is the reason for our being able to pass on to the field features that save time, labor and expense in ditch excavation. Features provided are offset boom, positive boom control, positive bucket cleaning—handles sticky soil, better balance, six digging speeds, digs close to obstructions, greater mechanical efficiency, large safety factors and low maintenance cost. An Austin, with reasonable care, will outlive any other ditcher.

May we send you a catalog covering the "Little Wonder"?

Write us today.

AUSTIN MACHINERY CORPORATION

MUSKEGON, MICHIGAN

SALES OFFICES

NEW YORK, N. Y., 30 CHURCH ST.
CHICAGO, ILL., 1355 RAILWAY EXCHANGE BLDG.
ST. LOUIS, MO., 1500 N. BROADWAY
CLEVELAND, O., 2112 SUPERIOR VIADUCT
SALT LAKE CITY, 511 NESS BLDG.
DALLAS, TEX., 209½ N. CLINTON ST.
DETROIT, MICH., 7496 FOURTEENTH ST.
TORONTO, CAN., 17 WALLER ST.
LOS ANGELES, CAL., 1947 MATEO ST.

AKME FLUE

MANUFACTURERS

1617-27 GUILFORD AVE BALTIMORE, MD.

Highly recommended by Gas—Chemical—and Combustion Engineers for Gas Ranges, because it is the only safe and efficient flue to use.

Range Experts consider it a necessity for the more economical—safer—and better operation of gas ranges.

Keeps the Kitchen free of grease and the dirt it collects—Assures the proper oven draft being constant.

Prevents serious hazards caused by connecting Ranges to the outside or oven vents being open.

Silvergray Finish—Aluminum White Porcelain—Black Japan

WORTH MANY TIMES THEIR COST

Patented—Beware of Unsafe, Infringing Imitations

RITER-CONLEY CO.

STEEL CONSTRUCTION

PITTSBURGH

STEEL PLATEWORK

FOR

THE GAS INDUSTRY

Gas Holders
Pressure Tanks
Steel Pipe
Steel Barges
Oil Tanks
Purifiers

BRANCH OFFICES

New York — Boston — Baltimore
Chicago — Philadelphia — Detroit
Cleveland — Cincinnati — Seattle
San Francisco — Los Angeles

Repair in the Modern Way

Retorts, Jamb Joints, Furnace Walls, Arches and Baffles Should Be Repaired With the

QUIGLEY GUN

The Quigley Refractory Gun fills cracks, repairs retorts, jamb joints of coke ovens, furnace walls, arches, baffles, etc.
It shoots the plastic mixture with great velocity so that it sticks, where hand troweled or rammed-in applications might fail to hold.
The Quigley Gun also makes hot patches.

Shooting Hytempite into Jamb Joint with the Quigley Refractory Gun.

HYTEMPITE

(Reg. U. S. Pat. Off.)

HYTEMPITE is used by hundreds of Gas Companies for laying up firebrick, (and when mixed with crushed old firebrick or Ganisand) for patching and repairing refractory linings, making special shapes and tile, etc.

The mixture of Hytempite and crushed old firebrick applied to wall or joint with the Quigley Gun makes certain an everlasting gas tight surface.

Keep a drum of Hytempite in the retort house or Boiler Room for quick repairs

QUIGLEY FURNACE SPECIALTIES CO., Inc.

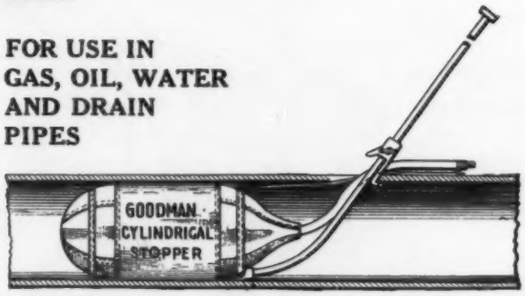
26 CORTLANDT STREET NEW YORK

Quick Service from Stock in Every Industrial Center

FOR SAFETY'S SAKE USE

THREE TYPES:
TYPE A—Seamless
TYPE B—Reinforced seams
TYPE C—Canvas-covered

FOR USE IN GAS, OIL, WATER AND DRAIN PIPES



Air Line Mask
With or without Blower.
Mask and Blower in separate cases.
Blower will supply sufficient air for four masks.

SOAP TAPE
Safety Gas Main Soap Tape for bandaging broken pipe. Also Binding Tape to cover soap tape bandage.

Safety Gas Main Stopper Co.

523 ATLANTIC AVENUE, BROOKLYN, N. Y.

Pacific Coast Representative:
C. B. Babcock Co.,
San Francisco, Cal.

Texas-Louisiana Representative:
Maintenance Engineering Corp.,
Houston, Texas.

New England Representative:
Eastern Service Co.,
Boston, Mass.

FULTON DUPLEX
Sensitive
GAS GOVERNOR

for high pressure transmission

This governor is designed to meet the needs of artificial and natural gas companies who desire to control a high and varying inlet pressure and reduce it to a low and unvarying outlet pressure, for illuminating or fuel purposes.

The materials used in its construction are resistant to the chemical action of all manufactured gases; all frictional surfaces are eliminated, and the diaphragm surface is increased by the use of two diaphragms, thus giving it vastly greater sensitiveness and power over governors equipped with but one diaphragm.

The Fulton Gas Governor is easily and quickly installed and requires a minimum of attention afterward.

Write for complete Catalogue

The Chaplin-Fulton Mfg. Co.

28-34 Penn Ave. Pittsburgh, Pa.

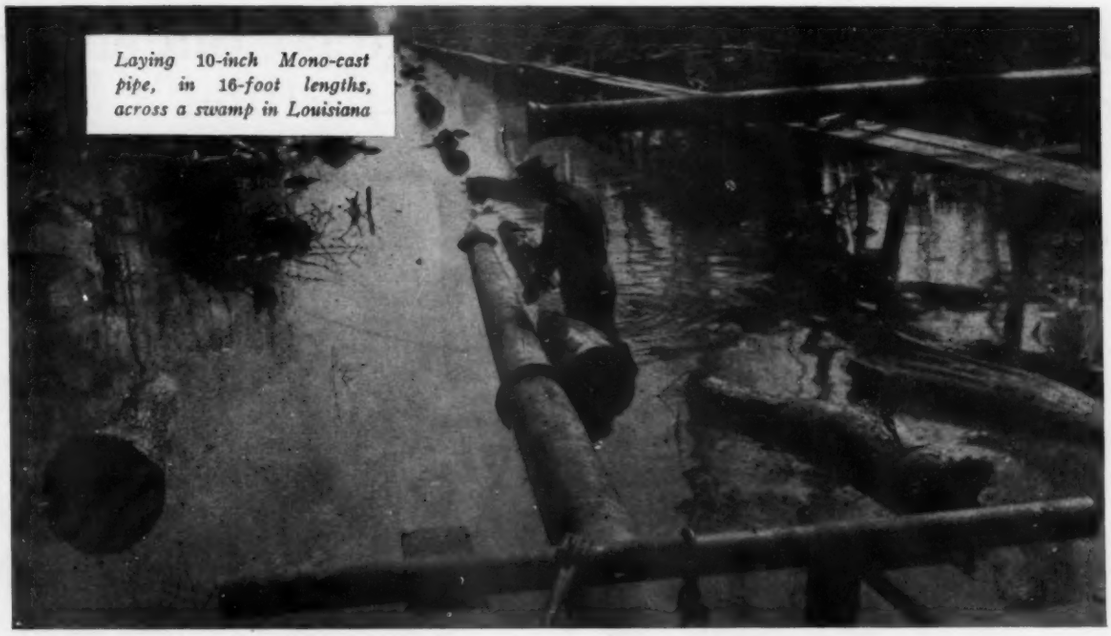
It's Worth While to look at the Last Cost

Unless we could demonstrate that the Haiss Belt Conveyor would do enough more work with sufficiently lower upkeep to warrant its preference over cheap-to-buy machines we would not be making the sales we do. A Haiss Belt Conveyor is the least expensive kind to own because it is GOOD.

With ball bearing belt rollers, strong rigid frame, pulley adjustments to keep the belt running true (as well as taut), the difference in design is evident.

Let us send you a Catalog and let a Haiss price quotation show you how little (if any) more it costs to buy quality in a Belt Conveyor.

GEORGE HAISS MANUFACTURING CO., INC.,
Park Ave. & 141st Street
NEW YORK, N. Y.



Laying 10-inch Mono-cast pipe, in 16-foot lengths, across a swamp in Louisiana

"Sixteen-foot lengths"— meant a lot on this job!

DEEP, treacherous ooze over which many pipe lengths must be trundled...muddy water up to the hips...malarial mosquitoes and stinging gnats tormenting the crew...no wonder this construction boss is thankful his company selected Mono-cast pipe for this swamp job!

Because ten-inch Mono-cast pipe—*in sixteen-foot lengths*—is a boon to the laying gang under difficult conditions.

Twenty-five per cent less joints to make... twenty-five per cent less digging bell holes, packing, melting lead, pouring, and caulking. Twenty-five per cent fewer haul trips....twenty-five per cent lighter loads!

Sixteen-foot lengths—eliminating 25% of the joints in the line—were first developed in centrifugal cast iron pipe by the American Cast Iron Pipe Company. *Sixteen-foot lengths* effect a 25% saving in the cost of all joints, labor and material, all down the line!

Due to the uniformity and higher strength of structure, Mono-cast pipe can be materially reduced in weight and metal thickness without sacrificing any of the safety factors for a given working pressure. Engineering tests have demonstrated that Mono-cast pipe, 25% thinner in metal section than pit-cast pipe, will withstand greater internal pressure.

AMERICAN CAST IRON PIPE COMPANY
BIRMINGHAM, ALABAMA
DISTRICT OFFICES IN PRINCIPAL CITIES

For Refractory Repairs and New Construction

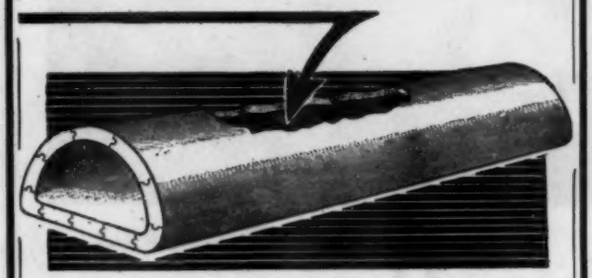
USE

IGNISITE

(Reg. U. S. Pat. Off.)

HIGH TEMPERATURE CEMENT

This broken retort was repaired with IGNISITE without shutting down the bench. The hole was two feet wide by six feet long.



"To avoid a shut-down, we filled the entire break while the retort was hot, forcing chunks of IGNISITE in place with a long paddle.

"While average repairs with other materials had never exceeded six weeks, this major repair LASTED OVER SIX MONTHS."

How about your own refractory linings in Gas Sets, Benches, Boiler Settings, etc.?

Get ready for emergency repairs. A Drum of IGNISITE may save a Ton of Trouble. Use it for new construction, too.

IGNISITE was developed by experts in the use of refractory cements after years of practical service tests. Strictly uniform in grade, easy to mix and handle, sets at normal temperatures, gives long service. When properly used there is no shrinkage. Gives a perfect surface seal at 1200° to 1400° F. Withstands temperatures up to the point of fire brick failure.

Packed in steel air-tight drums of convenient size from 200 to 800 lbs.

Send this Coupon

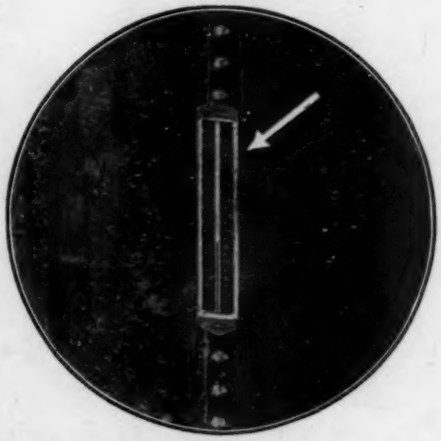
The M. W. Kellogg Co., Inc. (Refractories Division), 9 Dey Street, New York.

Send literature on IGNISITE and tell me how it is used for construction and maintenance in

[ ] Gas Benches [ ] Oil and Water Gas Sets
[ ] Coke Ovens [ ] Gas Fired Furnaces
[ ] Boiler Settings [ ] Bonding Fire Brick

Name .....
Position .....
Company .....
Address .....

Water Condenser Inlet



Just one of the many places in the gas plant where a Tycos Thermometer proves its worth.

Tycos Temperature Instruments

INDICATING-RECORDING-CONTROLLING

FOR EVERY GAS PLANT NEED

Ammonia Still Thermometer
Engraved Stem "
Flue Gas "
Gas Gauges
Gas Main Thermometers
Index "
Meter Prover "
Engraved "
Pyrometers
Recording Thermometers
Still "
Superheater "
Water Circulation "
Regulators for Pressures and Temperatures

Gas Plant Catalog upon request.

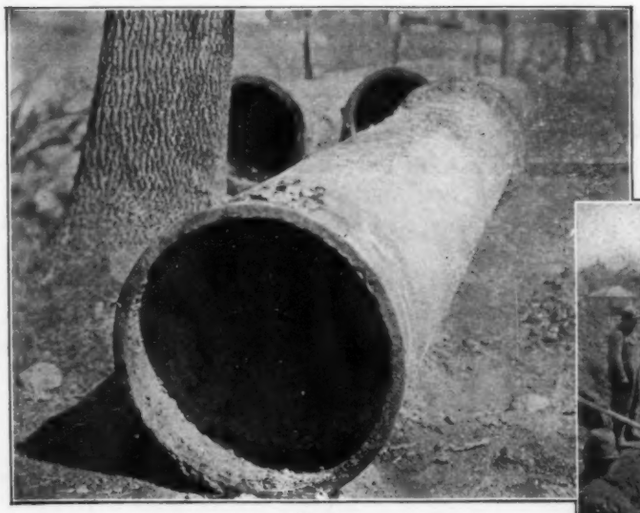
Taylor Instrument Companies

Rochester, N. Y., U. S. A.

Canadian Plant
Tycos Building
Toronto

Manufacturing Distributors
in Great Britain
Short & Mason, Ltd., London

There's a Tycos or a Taylor Temperature Instrument for Every Purpose



1

2

1- a length of cast iron pipe laid 40 years ago

2- the same pipe, after cleaning, being re-laid GOOD as NEW

The permanence of Bell and Spigot Cast Iron Pipe and the fact that it can be taken up and used elsewhere without loss of efficiency or deterioration, is of vital interest to every taxpayer.

THE CAST IRON PIPE RESEARCH ASSOCIATION
People's Gas Building, Chicago, Ill.

This Association was established to be of service to you

Information regarding the various accepted methods of handling alterations and moving of gas or water mains will be gladly forwarded to you.

Its functions are:

1. Collecting and compiling data with reference to Cast Iron Pipe and fittings for all purposes.
2. Assisting engineers in solving difficult and unusual problems.
3. Educating the public by national advertising in the importance of having up-to-date waterworks.

—It has nothing to sell:

Engineers, municipal authorities, and contractors are invited to write for special literature on the subject of water systems.

Of special importance is a reprint of an article on the "two mains system." Send for a copy.

BELL *and* SPIGOT JOINT—
the accepted standard for underground construction.

CAST IRON PIPE

—in continuous service for over 250 years

COOPER OVEN THERMOMETER

STYLE "B"
(Actual Size)
Interchangeable with heat control.
Nickel or Porcelain Enamel Cover

Shows actual Fahrenheit degrees.

Quick-acting thermostatic metal registers correct temperature immediately.

Extreme heat cannot injure or make the thermometer inaccurate.

Style B interchangeable with heat controls.

Carefully calibrated.

Porcelain enamel dials in two colors.

Accuracy guaranteed for the life of the oven.

No glass or mica to get broken.

Economical in price.

Handsome in appearance, adds greatly to the looks of any oven.

"Eliminates Guesswork"

"—it eliminates a considerable amount of guesswork in getting the correct temperature of the ovens and, in connection with cooking receipt guides or cooking charts, it is our opinion that indicators such as you make are invaluable."

Extract of letter from a prominent concern in Ohio manufacturing a well-known brand of stoves and ranges.

The Cooper Oven Thermometer Co.

4 MAIN STREET (Established 1885) PEQUABUCK, CONN.

BAROMETERS

PHILADELPHIA, THE WORKSHOP OF THE WORLD, has 14,000 Manufacturing Establishments of which many have World-Wide Reputations.

"PRINCO" STANDARD FORTIN MERCURIAL BAROMETERS

are in World-Wide use because they, too, have a "World-Wide Reputation"

THEY ARE GOOD BAROMETERS
THEY ARE REASONABLE IN PRICE!

For more than a decade they have been made in such manner that they can be shipped safely and successfully wherever there is a common carrier. This has been recognized as an achievement in Barometry.

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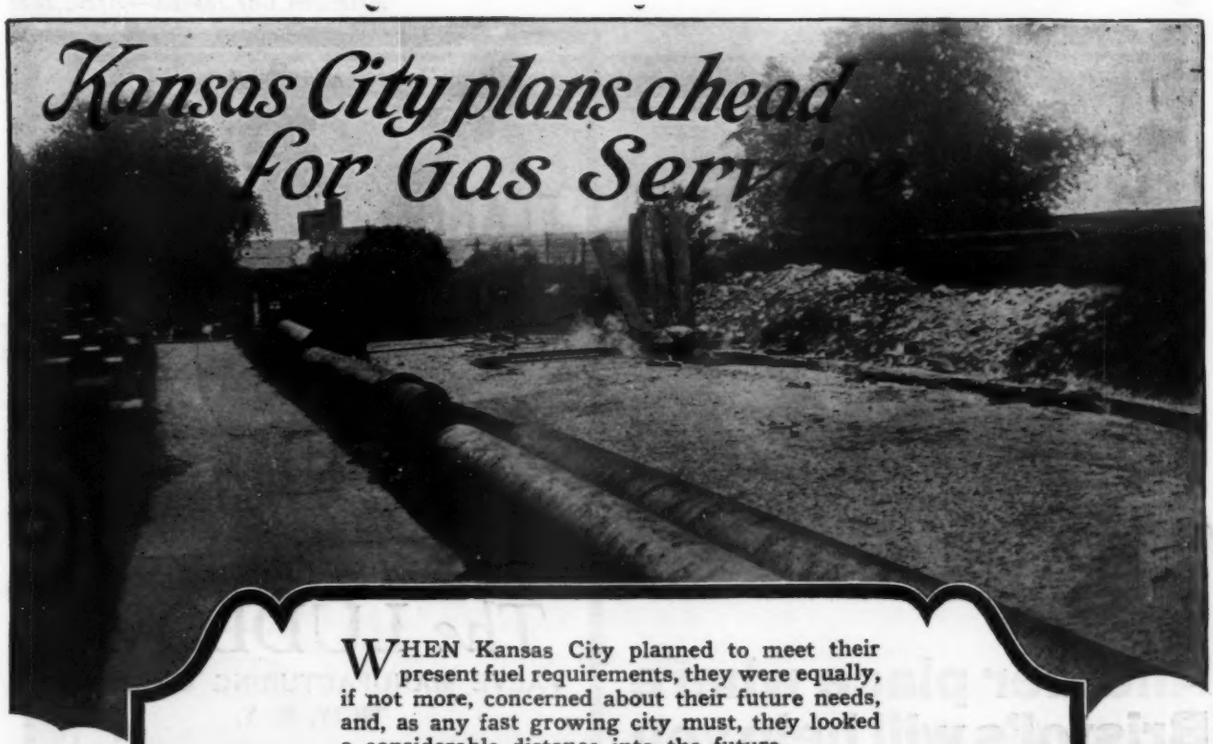

WHEN Kansas City planned to meet their present fuel requirements, they were equally, if not more, concerned about their future needs, and, as any fast growing city must, they looked a considerable distance into the future.

Naturally, their considerations included the important matter of the size and character of pipe to be used. Various other factors in pipe service were, of course, taken into account, but the one thing that stood out above all others was the probable life of the pipe line. An investment running into hundreds of thousands of dollars must be backed by sound reasoning, proven facts and practical experience. Only after carefully weighing all available evidence could any product be singly favored. The pages of gas line history left no room for doubt regarding the performance of at least one product.

The line was constructed of 24-inch "NATIONAL" Pipe—The Recognized Standard for Gas Line Purposes.

NATIONAL TUBE COMPANY

Frick Building, Pittsburgh, Pa.

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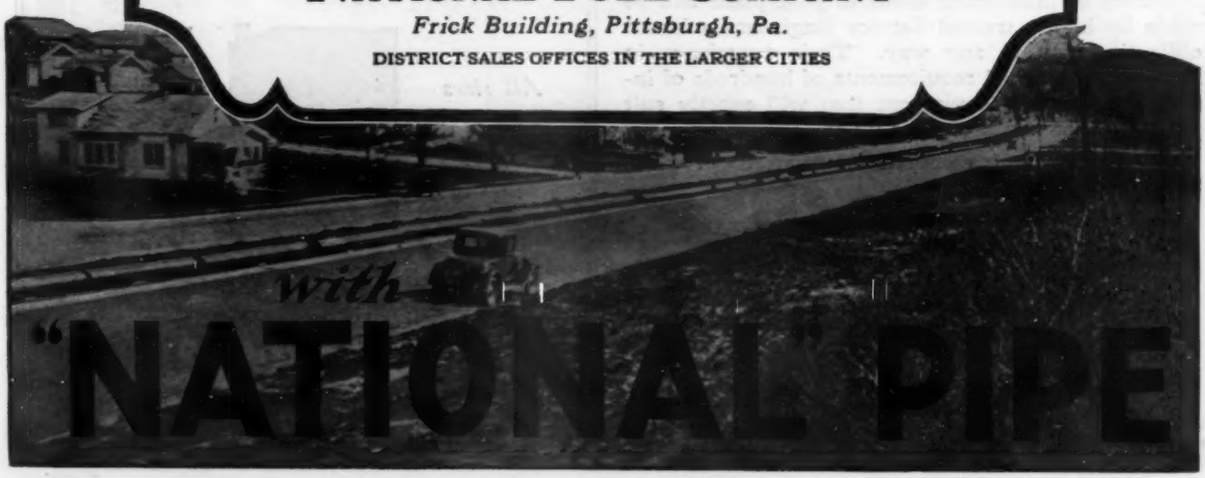

Bristol's Round Form Recording Thermometer. Can be furnished with two pens if desired, to record both incoming and out-going gas temperatures on the same chart.

Another place where Bristol's will help you cut production costs!

Fuel costs for coal gas generators are appreciably reduced by recovery and utilization of waste heat contained in the flue gases leaving retorts or oven settings. For most efficient recovery, however, it is highly important to KNOW AT ALL TIMES the temperature of gases both entering and leaving waste heat recovery equipment, as such a comparative check-up of inlet against outlet temperature is a guide to the operator in adjusting drafts and dampers.

Installation of Bristol's Recording Thermometers at the inlet and outlet of such equipment makes available continuous chart records of existing conditions at these points. Such records immediately reveal temperature variations in excess of that required for good operation.

A survey of instrument needs in your plant will be made by highly trained Service Engineers, without obligating you in any way. Their experience in handling the special requirements of hundreds of installations assures equipment that will exactly suit the particular needs of your plant.

Write for complete information

The Bristol Company — *Waterbury, Connecticut*

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BRISTOL'S — RECORDING — INSTRUMENTS

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A New Day has come to cast iron pipe!

THE year 1927 was a most significant one for users of cast iron pipe. It definitely saw the passing of the heavy, excess-weight pipe standards, and in their place the general acceptance of the modern types of stronger yet lighter pipe.

For the first time, the bulk of the cast iron pipe laid in 1927 was of these modern types where the emphasis was placed upon the quality rather than mere quantity of iron.

Illustration of McWane Screw-Joint Gas Pipe ready to screw together. This joint is leak proof, and exhaustive tests have proved it even stronger than the pipe itself because there is extra metal where the threads are cut

A NEW WAY AND A NEW DAY

Progress means change. In cast iron pipe progress has now taken the form of thinner, more uniform pipe walls—stronger iron and lighter weight, made possible by present-day improvements in art of pipe casting. Such improvements in any product always precede the new specifications. For specification must be based on improved practice—must be written *after* the improvement is made—not before.

McWane pipe is made not to equal but to *exceed* the best of yesterday. It is sand-cast—easily cut, easily tapped, ships well. For you it combines the best of the old with the best of the new.

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The Standard for Gas Making Since 1854

Since this Company commenced operations, its well-known Westmoreland "Criterion" Gas Coal has been largely used by the Gas Companies of Northeastern United States and Canada, and its character is established as having no superior in gas giving qualities and freedom from sulphur and other impurities.

Mines situated on the Pennsylvania Railroad,
in Westmoreland County, Pa.

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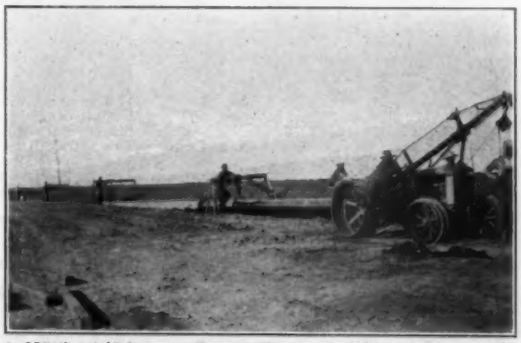
EMPIRE
AMARILLO-DENVER

1

A 22" line laid between Natchez, Miss., and Baton Rouge, La., by the Interstate Natural Gas Co. 85 miles protected with BITUMASTIC ENAMEL. Also the extension from Destrehan to New Orleans.

2



A 20" line laid between Pampa, Tex., and Wichita, Kan., by the Empire Gas & Fuel Co.—now the Cities Service Gas Pipe Line Co. All 250 miles coated with BITUMASTIC ENAMEL.

3

A 20" and 22" line laid for 240 miles between Amarillo, Tex., and Denver, Col., by the Colorado Interstate Gas Co. 87% of the coatings are BITUMASTIC products.

"THE business you are getting," said an engineer, "is not necessarily a proof of merit." This assertion is entirely correct. BUT — when the business is secured on a record of performance dating back for more than forty years —when the buyer supplements this record by a series of exhaustive laboratory tests — when this *double* investigation is repeated *three* times and results in the selection of one and the same pipe coating for all three of the three largest gas lines in the world—there can be, we believe, no *question* as to merit. If you are interested in this story and in the application of—

BITUMASTIC
(REG. U.S. PAT. OFF.)
ENAMEL

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Wailes Dove-Hermiston Corporation
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Philadelphia Cleveland Chicago Tulsa Houston San Francisco

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Smoot Engineering Corp.
The Gas Machinery Co.
The U. G. I. Contracting Co.

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Semet Solvay Engineering Corp.
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Western Gas Construction Co.

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Designing
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Pittsburgh Equitable Meter Co.
Reynolds Gas Regulator Co.
Semet Solvay Engineering Corp.
Station Automatic
Chaplin-Fulton Mfg. Co.
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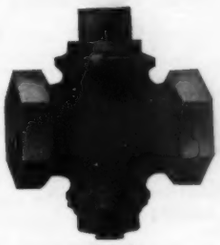
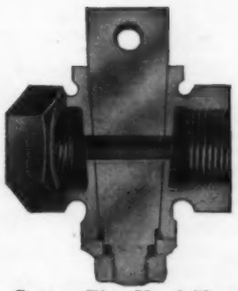
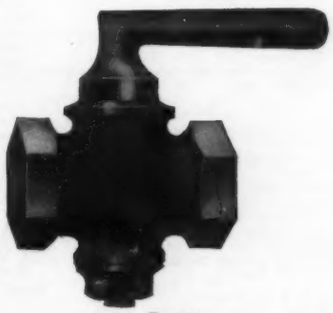


G-205
Squarehead Standard



G-417—Flat Head Key
High Pressure Cock

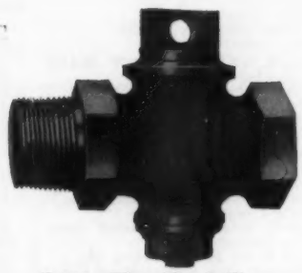


G-207
Solid Lever Handle Key

G-415—Flat Head Key

G-215
Lockwing Standard

G-515—Iron Body Gas
Cock, Long Wing, with
Brass Key

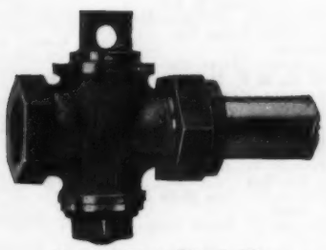


G-211—Flat Head Key

G-401—Flat Head Key

G-203
Tee Head Standard

G-475
Thumb Head Key



G-451—Flat Head Key

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